

# RAILWAY AGE

One of Five Simmons-Boardman Railway Publications

## IN THIS ISSUE:

Whistle or Radio  
Controls Gates

Way to Increase  
Net Income

Diesel Servicing  
At Argentine

Penn Station Air  
Rights Optioned

What Kind of  
Freight Cars?

DESIGNED FOR ALL  
TYPES OF GONDOLAS

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MULTIPLE  
STRAP  
LOCATIONS



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LOADING BAND  
ANCHOR  
*and*  
REINFORCEMENT

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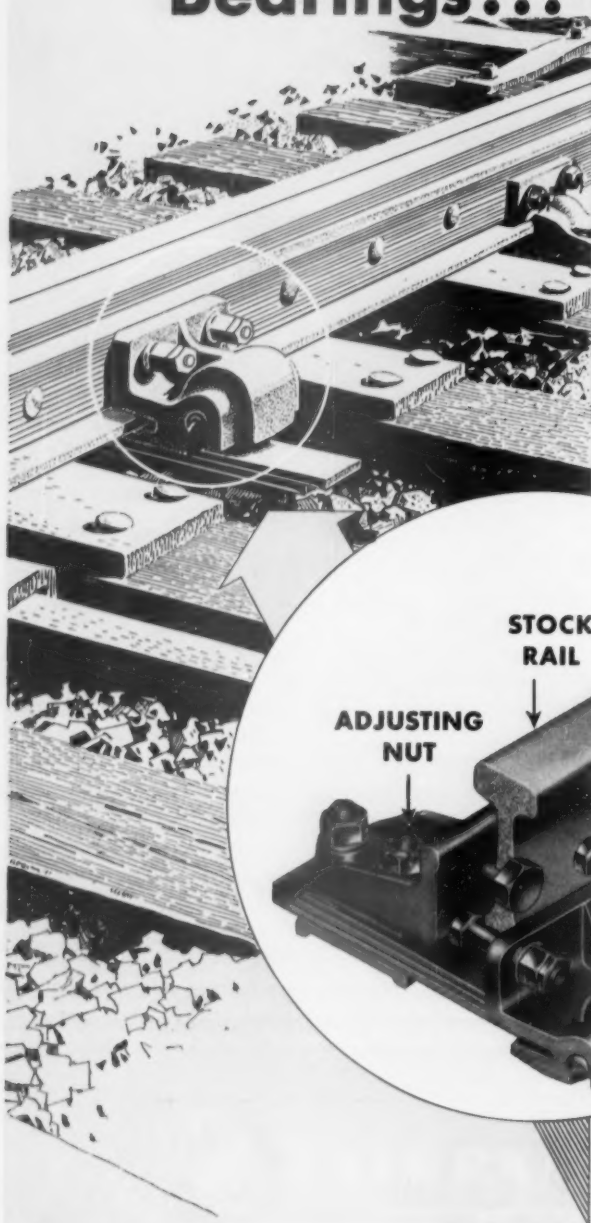
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# RAILWAY AGE

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December 6, 1954

Vol. 137, No. 23

## Week at a Glance

**FORUM**—What kind of freight cars? Special "single-purpose" cars have long been frowned upon by mechanical and operating men—but should they not more thoroughly investigate the earning capabilities of such equipment, and the reductions in loss and damage claims which may be realized? **29**

**Speedy locomotive servicing** is featured at the Santa Fe's Argentine, Kan., diesel facilities where a three-track "production line" expedites sanding, fueling, watering and cleaning of locomotives. **30**

**A way to increase income**—by means of better car movement information—was the theme at the Fall meeting of the Railway Systems and Procedures Association. **33**

**Trailer-flat cars build traffic** on the Southern Pacific where "piggyback" service has been in use for 18 months and where more than 100 trailers are now handled daily. **36**

**Whistle or radio controls gates** on Richmond, Fredericksburg & Potomac installation which also features selective speed controls at crossing approaches. **40**

## BRIEFS

**A sealed journal bearing**, made by the National Motor Bearing Company, Redwood City, Cal., has been approved by the AAR for test installation on 10,000 interchange freight cars. The new device is said to seal journal boxes at both ends to prevent loss of lubricant, or entry of dirt or moisture; the axle in motion forces oil to all moving parts.

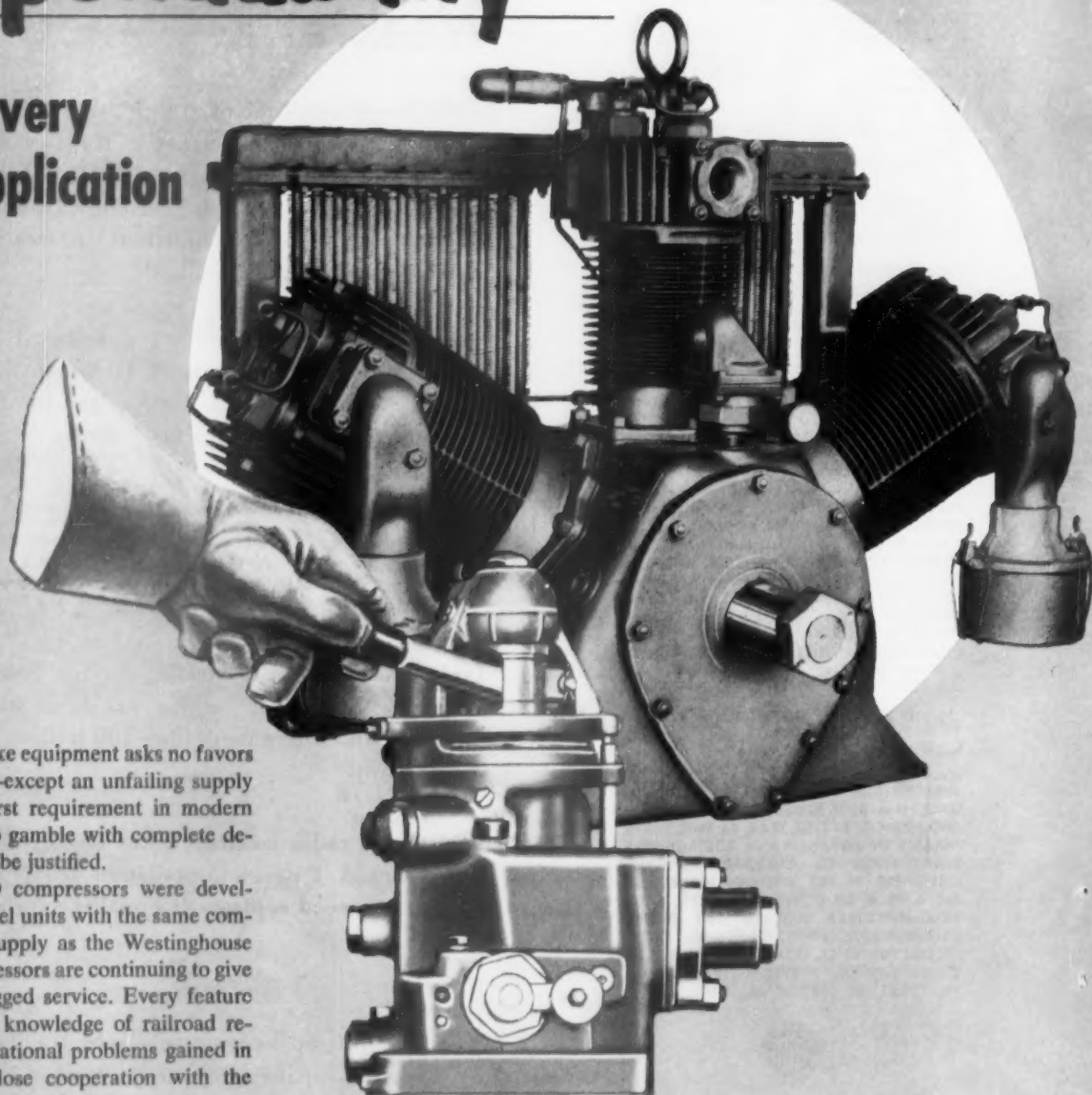
**Complete abandonment of commuter service** on its Putnam and West Shore (River) divisions is under serious consideration by the New York Central. The West

# WESTINGHOUSE CD COMPRESSORS

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# dependability

behind every  
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
**W**estinghouse Brake equipment asks no favors on any assignment—except an unfailing supply of air. That's the first requirement in modern train control, and no gamble with complete dependability can ever be justified.

Westinghouse CD compressors were developed to provide Diesel units with the same completely reliable air supply as the Westinghouse Steam Driven compressors are continuing to give through years of rugged service. Every feature reflects the intimate knowledge of railroad requirements and operational problems gained in over 80 years of close cooperation with the nation's leading transportation system . . .

1. Radiator-type intercooler between high pressure and low pressure cylinders reduces temperature of discharge air and increases efficiency.
2. Full-pressure type lubrication system maintains even, constant flow of filtered oil to connecting rod crankshaft bearings and wrist-pin bearings.
3. Throw-off of oil from connecting rod bearings lubricates cylinder wall and also main crankshaft ball bearings. Oil pressure relief valve "meters" oil in accordance with compressor speed.

**NEW MOVIE AVAILABLE** entitled, "*AT THIS MOMENT*"—showing a vivid story of modern railroad progress. Length 26 minutes, on 16 mm. color sound film. For use of film write: United World Films, Inc., 1445 Park Ave., New York or Association Films, Inc., 347 Madison Ave., New York.

## Westinghouse Air Brake COMPANY

AIR BRAKE DIVISION  WILMERDING, PA.

## Current Statistics

Operating revenues, nine months	
1954 .....	\$ 6,975,490,037
1953 .....	8,082,250,257
Operating expenses, nine months	
1954 .....	\$ 5,546,999,420
1953 .....	6,087,046,185
Taxes, nine months	
1954 .....	\$ 658,143,188
1953 .....	972,804,921
Net railway operating income, nine months	
1954 .....	\$ 580,613,411
1953 .....	845,430,758
Net income, estimated, nine months	
1954 .....	\$ 394,000,000
1953 .....	650,000,000
Average price railroad stocks	
November 30, 1954 .....	78.52
December 1, 1953 .....	60.59
Carloadings, revenue freight	
Forty-seven weeks, 1954 .....	30,761,090
Forty-seven weeks, 1953 .....	35,291,526
Average daily freight car surplus	
November 27, 1954 .....	32,008
November 28, 1953 .....	43,180
Average daily freight car shortage	
November 27, 1954 .....	960
November 28, 1953 .....	332
Freight cars on order	
November 1, 1954 .....	12,853
November 1, 1953 .....	35,171
Freight cars delivered	
October 1954 .....	1,817
October 1953 .....	8,727
Average number of railroad employees	
Mid-October 1954 .....	1,054,602
Mid-October 1953 .....	1,214,550

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## Week at a Glance CONTINUED

Shore abandonment, if approved, would include also elimination of the Central's trans-Hudson River ferry operations between Weehawken, N. J., and New York City.

**Christmas mail** to be handled by rail is expected to total over 5.5 billion individual pieces—enough to fill more than 5,000 trains of 12 standard mail cars each. This means, says the AAR, more than 200 solid mail trains a day, with each carrying over a million pieces.

**Railroad passenger traffic can be made more profitable**, T. C. Gray, engineering vice-president of Pullman-Standard, told the annual meeting of the American Society of Mechanical Engineers. New lightweight trains, central auxiliary train line power supply, effective standardization, and elimination of "custom building" all will help, he said, to put railroads in a more favorable competitive position among passenger carriers.

The ICC has eased restrictions on Rock Island trucks, authorizing their operation in "all-motor" service on several routes. The commission acted under its power to issue certificates to motor carrier affiliates of railroads "with or without restrictions as the circumstances may require." It said the decision was not to be construed as an approbation of its tie-to-rails policy. It was an "exception to that policy justified by the evidence."

**Report of President Eisenhower's Cabinet Committee** on Transport Policy did not get to the White House on schedule, which called for its arrival there by December 1. It was then expected to be submitted by the end of this week.

It is reported to be "highly probable" that top officers of several midwestern railroads will sit down with a group of motor common carrier officers sometime in the next few weeks. The invitation is apparently being extended by the truckers. Object of the meeting: Open and frank exploration of all phases of piggyback.





# Marks the Spot where Your Cars take a Terrific Beating

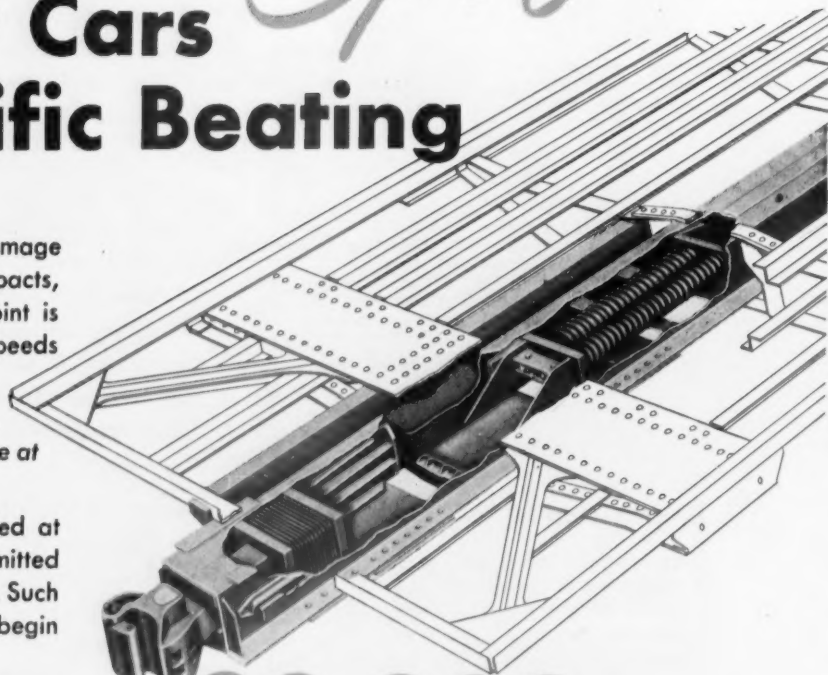
As all railroad men know, car and lading damage starts when, from switching and similar impacts, draft gears go solid. They know that this point is reached with conventional cars at coupling speeds of 4 to 5 mph.

What they may not know is that more than 75% of coupling impacts have been found to be at speeds in excess of 5 mph.

When a loaded friction gear car is coupled at speeds in excess of 4 to 5 mph, forces transmitted to car structure exceed the yield point of steel. Such impacts do more than damage a car . . . they begin to destroy it.

Further, checks of bad-order car reports indicate that approximately 50% of all freight car running repairs are caused by excessive impacts.

Herein lies the sheer economics of better cushioning . . . here are the dollars and cents reasons why every railroad should initiate a program now of equipping all new freight cars with the Waugh High-Capacity Cushion Underframe.



**90,000** ft.lbs.  
of protection!

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## Reparations Estimate Trimmed

Justice Department "guess" of \$475 million far under \$2 billion originally figured—Railroads move for dismissal of all 17 "overcharge" cases

The much-quoted \$2-billion appraisal of the war materiel "reparations cases" was pared surprisingly in a Department of Justice "guesstimate" offered to the Interstate Commerce Commission last week during oral argument at Washington.

James E. Kilday, in charge of the government case against the railroads, told the commission he would "guess" that the "amount of potential liability in the 17 . . . cases is about \$475 million."

The figure was quoted Wednesday morning after ICC Chairman Mitchell, obviously annoyed the previous day, had ordered Department of Justice attorneys to furnish it. He and his colleagues, particularly Commissioners Johnson and Alldredge, had tried repeatedly through Monday and Tuesday's sessions to obtain even the roughest of estimates of the total money involved in the government's claims.

Chairman Mitchell had accused the Justice Department of "a concerted effort . . . not to give us the least idea of what is involved."

Mr. Kilday's figure was, he said, given "without any firm factual basis." Earlier he had said he had not the "slightest idea" of what the total claim amounted to.

He said that "once the commission makes its determinations in the case the General Accounting Office would have the duty of calculating the amount due under the determinations. Under that theory we have had no occasion to calculate the amount and have not done so." The \$475-million figure, he emphasized, was only a "guess."

**Railroads Disagree**—Kenneth F. Burgess, attorney for the railroads, began the defense arguments soon after Mr. Kilday offered his estimate, and promptly set out to repudiate the figure as too low. He cited the statements of railroad officers, the Department of Justice, and others, as previously noted in the record of the case, placing the total reparations involved at somewhere between two and three billion dollars.

He said Mr. Kilday's figure "challenged" the testimony of these individuals. However, Commissioner Mitchell said he felt there was no real challenge, so inconclusive was the "guess." Indicative of his interest in the amount of the reparations, however, was a statement he made in an

earlier exchange over the subject with another government attorney. Mr. Mitchell, suggesting that the government claims might bankrupt the railroads or force them under federal ownership, asked: "Should we grant these reparations in face of what we know the National Transportation Policy to be?"

The case against the railroads is that, during the war years in some 17 separate cases consolidated into one proceeding now before the ICC, the roads either charged the War, Navy and other federal departments too much on various types of shipments or, by exclusion of land grant deductions and insistence on so-called "policing rules" on export traffic, deprived the government of privileges to which it was entitled.

The railroads contend, however, that their wartime tariffs and rates were, if anything, "unduly low" and that the government was not entitled to many of the privileges it has claimed. Furthermore, they maintain—and this was brought out by Mr. Burgess—that

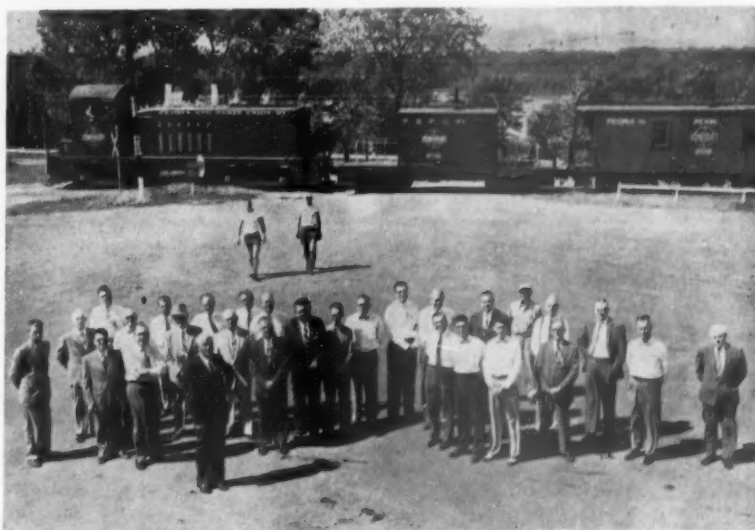
much of the wartime transportation of government property was performed under Section 22 agreements negotiated by federal representatives or under compromise agreements to which the government was a willing party.

A proposed report by ICC Examiners Hosmer and Boat was also called up in support of the railroad defense. In it, the ICC was advised to dismiss each of the 17 separate complaints without reparations to the government. The examiners consistently held that the rates charged government shippers were not only reasonable but were below normal commercial charges.

Mr. Burgess said the government was always offered the lowest of available rates under existing tariffs, tariffs allowing land grant deductions or under Section 22 offerings.

He said the government was saved more than a billion dollars through land grant deductions and equalization agreements voluntarily entered by non-land grant roads to meet competition. In addition, he went on, substantially more than a billion dollars was cut from government transportation costs through Section 22 rates. He declared that the excessive revenues theory was discounted by the decline throughout the war years of the railways' net operating income.

The "financial integrity" of every Class I road is at stake in the proceedings, he said, and attacked the govern-



**TRAFFIC MEN OF SEVEN RAILROADS** recently inspected facilities of the Peoria & Pekin Union. Seen here with G. J. Willingham, president of the road (in left foreground, wearing dark suit) are traffic representatives of its various parent companies,

including the Illinois Central; Chicago & North Western; Chicago & Illinois Midland; New York Central (Peoria & Eastern); Nickel Plate; Pennsylvania, and Gulf, Mobile & Ohio (which is a tenant). Behind the traffic men is special inspection train.

ment complaint on these grounds: Failure to act within the statute of limitations, the binding obligations of contracts, inequity of double recovery in that the roads have already paid taxes on their wartime earnings, lack of federal jurisdiction over traffic to and from Canada, and the obligations of compromise agreements. However, he said, the commission ought to dismiss the charges, not on those technical grounds, but on the very failure of the government to prove its case.

## Furlough Fares Extended

Furlough fares for military personnel traveling in uniform at their own expense have been extended to January 31, 1956. They had been scheduled to expire next January 31.

The furlough fares are tax-exempt, round-trip coach rates on the basis of 2.025 cents per mile or less.

## Figures of the Week

### Freight Car Loadings

Loadings of revenue freight in the week ended November 27 (which included the Thanksgiving holiday) totaled 583,515 cars, the Association of American Railroads announced on December 2. This was a decrease of 113,831 cars, or 16.3%, compared with the previous week; a decrease of 12,715 cars, or 2.1%, compared with the corresponding week last year; and a decrease of 86,856 cars, or 13.0%, compared with the equivalent 1952 week.

Loadings of revenue freight for the week ended November 20 totaled 697,346 cars; the summary, compiled by the Car Service Division, AAR follows:

REVENUE FREIGHT CAR LOADINGS			
For the week ended Saturday, November 20			
District	1954	1953	1952
Eastern .....	116,582	120,536	137,118
Allegheny .....	128,779	144,528	159,838
Poconantas .....	53,137	51,285	59,065
Southern .....	122,753	123,665	130,048
Northwestern .....	89,941	101,800	128,791
Central Western .....	126,965	122,095	132,690
Southwestern .....	59,189	61,823	63,523
Total Western Districts .....	276,095	285,718	325,004
Total All Roads .....	697,346	725,732	811,073
Commodities:			
Grain and grain products .....	58,668	47,825	50,728
Livestock .....	11,533	11,079	13,896
Coal .....	131,453	127,637	149,461
Coke .....	9,046	12,221	15,014
Forest products .....	42,986	44,088	45,735
Ore .....	26,201	45,662	73,047
Merchandise I.C.I. .....	63,908	66,596	73,674
Miscellaneous .....	353,951	370,624	389,498
November 20 .....	697,346	725,732	811,073
November 13 .....	708,757	727,058	828,750
November 6 .....	695,097	747,868	829,295
October 30 .....	736,233	780,843	862,116
October 23 .....	746,007	804,413	760,773
Cumulative total:			
47 weeks .....	30,761,090	35,291,526	34,643,028
In Canada.—Carloadings for the			

seven-day period ended November 7 totaled 76,863 cars, compared with 101,516 cars for the previous 10-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connect.ous
Totals for Canada:		
November 7, 1954 .....	76,863	23,343
November 7, 1953 .....	79,485	30,656
Cumulative Totals:		
November 7, 1954 .....	3,126,617	1,210,517
November 7, 1953 .....	3,443,083	1,401,865

## Law & Regulation

### Is Rail Transport of Circuses Common Carriage?

The Interstate Commerce Commission has instituted an investigation to determine whether railroads are acting as common carriers or private carriers in transportation of circuses and show outfits.

This status question, the commission's notice said, has arisen as a result of a decision of the United States Court of Appeals for the Fifth Circuit in *Chicago & North Western Ry. Co. v. Davenport*, holding that the railroad in that instance was operating as a common carrier of circus property.

The investigation is docketed as No. 31656, and all railroads have been made respondents. No date has been set for hearings.

### ICC Bureau Reissues Statement on Costs

The Interstate Commerce Commission's Bureau of Accounts, Cost Finding and Valuation has reissued, with some revisions, its "Explanation of Rail Cost Finding Procedures and Principles Relating to the Use of Costs." The new issue is Statement No. 4-54 of the bureau; it bears the usual disclaimer saying it "has not been considered or adopted" by the commission.

### C&O Truck Service Upheld by High Court

The United States Supreme Court has upheld a West Virginia court's ruling that supplemental motor truck operations by the Chesapeake & Ohio in that state are a lawful part of its services.

The West Virginia Supreme Court of Appeals had reversed an order of the State Public Service Commission in 1952 denying a C&O application to provide the truck service on I.C.I. shipments within the state. When the PSC granted a certificate to the C&O in April 1954, the West Virginia Motor Truck Association and two truck com-

## NEW ROCK ISLAND TRAIN IS READY FOR PRODUCTION

The Rock Island's Talgo-type streamliner, the "Jet Rocket," is now off the drawing board, and the train is ready for production, J. D. Farrington, president of the road, revealed last week.

A specially-conceived diesel locomotive, standing 10 ft, 9 in. above the rails, will power the new train. The rounded roof of the 1,200-hp locomotive will conform to the height and contour of the train, which will consist of four, three-unit articulated cars having seating capacity of 300 (*Railway Age*, June 29, Page 60).

ACF Industries will build the "Jet Rocket." Mr. Farrington said the delivery date of December 1955, announced last June, still holds good.

Featured in the locomotive will be auxiliary diesel engine units that will provide light, heat and air-conditioning for the train.

Mr. Farrington said the all-new "Jet Rocket" will be displayed at several key points on the Rock Island system before going into regular service between Chicago and Peoria, Ill.

panies appealed its action before the West Virginia District Court.

The appeal was dismissed with a ruling that the service was merely supplemental to the road's rail operations and not a wholly new service competing with truckers. The U.S. Supreme Court's affirmation of the lower court ruling was issued without opinion.

## Traffic

### New Haven Makes Special Mail-Handling Contract

The New York, New Haven & Hartford has entered into a contract with the Post Office Department for transportation of all mail on its system other than mail moving in railway post office cars or in "Trailer" (piggy-back) service.

In essence, the contract provides for setting a rate per foot of storage mail (the basic unit upon which mail pay claims are based) loaded and unloaded during a test month at principal mail generating points on the New Haven. This rate will be applied during each of the ensuing six months and compensation for transportation of such mail will be determined monthly on a volume basis. To insure that the rate conforms to the changing characteristics of mail on a basis equitable to both parties, the rate will be tested each April and October.

The new contract permits prompt preparation, presentation and payment



of mail claims, and is said to clear the way for more economical and efficient handling and transportation of mail on the New Haven. It also simplifies the "complex and costly" accounting and billing procedures which have grown up over past years and which in some cases have delayed railroad mail payments several years. "It is hoped," the New Haven says, "that the new contract will set a pattern for the railroad industry and help it compete more effectively for mail traffic in the future."

Patrick B. McGinnis, president of the New Haven, has described the contract as "the first of its kind effected by any railroad with a government agency."

For several months Mr. McGinnis has said publicly that "railroads must obtain the right to make contract rates with shippers." Carriers other than railroads may contract for freight transportation, he emphasizes, and rail systems should be accorded the same privilege.

Mr. McGinnis also has said the New Haven "must do more for the Post Office than to implement the new contract. We must give the department what it needs for facilitating mail handling. We must look to the latest technological advances to replace time-consuming practices of the past." The road's operating department has been directed to begin a study of newspaper and magazine handling so there will be a faster flow of such matter to coincide "with accomplishments of the publishing industry generally."

**Mail Trains?**—Mr. McGinnis has further revealed that he is planning a system of moving mail and express in trains carrying such cargo exclusively. "Loading and unloading of mail and express cars at the head-end of a passenger train often causes delays that are annoying to passengers and slow down calculated time schedules of the system," he said. He elaborated, "I envisage whole trains of passengers only and whole trains of mail and express only."

by our lawmakers." "The unfavorable implications" of this apathy, the report said, "are of concern not only to investors in railroad securities but to the country as a whole."

The committee found some reason for optimism in President Eisenhower's appointment of a Cabinet Committee on Transport Policy and Organization; and described the "character" of that committee's members and "their successful private experiences in solving complex competitive business problems" as important reasons for believing that "some constructive suggestions may result." Its optimism was tempered, however, by the cautionary "hope" that the Cabinet Committee's report "will produce more tangible results than have been evident from other efforts to modernize our transportation policy."

**Mixed Feelings**—As to railroad securities, the report said "investors probably view 1954 with mixed feelings of satisfaction, confusion and frustration. Satisfaction would stem from the good market performance of a wide range of railroad securities. Confusion is understandable when it is realized that a stock market rise occurred in the face of a substantial decline in railroad earnings and no apparent improvement in the competitive position of the industry. Frustration may well stem from the fact that so little has been accomplished toward revising our national transportation policy."

Elsewhere, the IBA committee pointed out that "many millions of dollars must be spent each year if the [railroad] industry is to maintain an efficient and modern operation."

**Eastern Roads**—Attention also was directed to the special problems of "large eastern roads, whose earnings are adversely affected by huge operating losses in the passenger division, heavy terminal costs, and erosion of traffic by competing forms of transportation."

"This group of roads," the committee said, "presents a difficult prob-

## Financial

# Freedom, Equality, Prime RR Needs

IBA committee praises railroads for ability to control costs, but criticizes "apathy" of lawmakers

"Action as well as words" is needed to insure the "financially strong and well equipped railroads" which are essential to "an adequate national transportation system" capable of meeting "demands of peace or war," the Investment Bankers Association of America was told by its Railroad Securities Committee last week.

The report—presented to the association's 43rd annual convention at Hollywood, Fla., by Charles L. Bergmann, partner in the New York Stock Exchange firm of R. W. Pressprich & Co.—found "both favorable and unfavorable aspects" in the railroads' position. "Which will predominate over the longer term," it said, "depends in large measure on how wisely and courageously our railroad managers and our political leaders deal with problems of transportation regulation and promotion."

**"Favorable"**—On the favorable side, the committee emphasized the fact that railroad management, as a whole, has been able, in 1954, "to control operating costs to a much greater degree than would have been thought possible 20 years ago." It attributed much of this cost control ability "to large postwar expenditures for modernization of plant and equipment," but added that "railroad management itself must be given a great deal of credit for adopting new techniques in operating and maintenance procedures and in budgetary control

systems." The resulting "demonstration by the railroads of their ability to exercise a reasonable degree of cost control in the face of an 11% revenue decline has been most reassuring to many investors," the report continued.

**"Unfavorable"**—While noting the decline in gross and net revenues in 1954 as compared with 1953, the committee considered "the most unfavorable aspect of the outlook for the railroad industry to be the apathy with which railroad problems are viewed



CHAMP CARRY (left), president of Pullman, Inc., accepts from Weston Smith, executive vice-president of Financial World magazine, the trophy awarded to Pullman for the excellence of its 1953 annual report, which won first prize in the rail equipment category in the publication's contest. Railroads receiving top awards were the Santa Fe, the Rio Grande and the Kansas City Southern.

lem which must be recognized and dealt with by the entire railroad industry as well as by regulatory bodies. They require larger earnings to provide funds for capital expenditures to promote increased efficiency. . . . What is needed most is an equality of competitive opportunity and management freedom that will enable all railroads to seek to recapture a large volume of traffic which has been diverted to more favorably situated competitors although the rails can handle the traffic more efficiently."

## Competitive Transport

### Five Western Roads Sue to Halt Air Mail Experiments

Five of the roads most directly affected by addition of the west coast to the three-cent-by-air-mail experiment have filed suit to enjoin the Postmaster General from proceeding with his program.

The suit, filed with U. S. District Court for the District of Columbia November 20, challenges the legality of the experiment on the ground that the distinction between air mail and other mail, including first class, is not preserved. It is illegal, the roads charged, to give the same service to non-air mail as to mail on which the Congressionally fixed rates for air mail are paid.

The roads bringing the suit are the Santa Fe, Great Northern, Northern Pacific, Southern Pacific and Union Pacific. Attorneys bringing the suit include J. Carter Fort, vice-president and general counsel, Association of American Railroads, and Gregory S. Prince, assistant general solicitor, AAR.

The Civil Aeronautics Board, now considering the Post Office Department's request to fix a temporary rate for the Pacific coast service (*Railway Age*, November 22, page 11) is not involved in the suit. Nor is a similar service which has been in operation for about a year linking Chicago, New York, Washington and Florida cities. The Post Office, without a temporary rate being fixed by the CAB, has started the three-cent-mail-by-air service connecting cities between San Diego and Seattle.

### ICC Denies Plea to Probe Coal Trucking

The Interstate Commerce Commission has denied a petition wherein railroads serving Pennsylvania coal fields sought an investigation "into alleged illegal trucking of anthracite coal by approximately 250 individuals, from points in Pennsylvania to points in New Jersey and New York."

The commission's denial order said this adverse action on the petition was



THE 10,000th FREIGHT CAR built at the Sacramento, Cal., shops of the Southern Pacific since 1950—about to be christened with a bottle of Sacramento River water by Mrs. Virginia Rakijar, clerk in the car shops

office. Hauling out some statistics for the occasion, the SP reported that the 2,700 gondola cars, 1,000 flat cars and 6,300 box cars constructed at the shops would make a solid train extending from Sacramento to Oakland.

"without prejudice to the filing of a complaint against those whom the railroads allege are engaged in unlawful operations." Petitioning railroads were: Jersey Central; Delaware & Hudson; Lackawanna; Erie; Lehigh & New England; Lehigh Valley; Pennsylvania, and Reading.

## Operations

### Fitted Journal Bearings Still Show Promise

The fitted journal bearing test being conducted by the Mechanical Division of the Association of American Railroads in conjunction with the Merchants Despatch Transportation Corporation (*Railway Age*, August 30), continued to show favorable results through the hot months of June, July and August; this type of bearing may soon be made an AAR alternate standard. Necessary changes in AAR manuals and interchange rules, submitted for approval at the General Committee meeting in New York, November 17, were referred back to originating committees for further information and subsequent prompt handling by correspondence.

Favorable laboratory reports on fitted bearings have been received, both from the AAR Research Center and the Armour Research Foundation in Chicago. They supplement road service tests in which 1,000 cars accumulated over 19 million miles up to September 1, with only one reported heating failure in 7,078,449 car-miles charged

to fitted bearings. Even this reported failure was subsequently found to be due to a cocked wedge, and the record corrected. In the same period, experience with non-fitted bearings showed 29 heating failures, or an average of 417,202 car-miles per failure.

Expressed in terms of bearing removals for heating failures resulting in car delays, the comparative performance to September 1 was: For fitted bearings—none in 7,078,449 miles; for non-fitted bearings—12 in 12,098,858 miles, or an average of 1,008,238 car-miles per failure.

It is planned to continue this test until all the bearings have been removed from service in order to appraise relative efficiencies of the two types of lining metal used and to obtain other pertinent information. Results to date, however, are so promising that the Mechanical Research Department reportedly favors prompt action to make fitted journal bearings an AAR alternate standard.

### NYC Adds Second Train To Fast Freight Service

The New York Central has added a second train, designated by the time-card symbol "CD-4," to its new fast daily Chicago-New York through freight service. Like the first train, the "NY-4," which started November 17 (*Railway Age*, November 29, page 11), the "CD-4" gives receivers of perishable freight a 24-hour advantage over the road's best previous service.

Both trains stop only to change crews and to ice their refrigerator cars. The new train, consist of which has included more than 60 cars, is scheduled to arrive in the NYC's 33rd Street

yard in New York City at 6 p.m. The "NY-4," with a scheduled arrival time of 4 a.m., has consistently been ahead of schedule, and has operated with close to 100 cars.

## **Santa Fe "Chief" Hits Broken Rail; 9 Cars Off**

A broken rail on the main line near Needles, Cal., caused a derailment of the Santa Fe's Los Angeles-to-Chicago "Chief" on November 25. Nine cars left the tracks but these remained upright and there were few injuries to passengers.

## **GN 'Piggyback' Service Extended to Fargo, N.D.**

Overnight "piggyback" service between Minneapolis-St. Paul and Fargo, N.D., was instituted by the Great Northern November 30.

The new service is an expansion of trailer-on-flat-car operations which the road began last May. This original service was between the Twin Cities and Duluth-Superior (*Railway Age*, May 17, page 9).

Until tariffs are established for full trailer loads, the GN said, only LCL merchandise will be handled in the new Twin Cities-Fargo service.

## **Equipment & Supplies**

### **PASSENGER CARS**

The **Missouri Pacific** has been authorized by the St. Louis Federal District Court to spend \$537,260 for two new sleeping cars, installation of automatic door openers on 32 sleeping cars, conversion of two six-man dormitory-grill coaches to accommodate 12 or 14 dining car crew members, and application of tightlock couplers and electric brakes to five head-end cars. The two new cars, each to contain six bedrooms and eight roomettes, will go into service on the St. Louis-Houston run of the "South Texas Eagle."

### **COMMUNICATIONS**

The **Atlantic Coast Line** has placed a \$120,000 order with Bendix Radio Division of Bendix Aviation Corporation for equipment to install radio train communication on 465 miles of line between Waycross, Ga., Birmingham, Ala., and Atlanta, Ga. Mobile units will be installed on 30 locomotives and 15 cabooses. The locomotive units incorporate the Bendix 64-volt power supply apparatus, which operates directly from a diesel engine starting battery. Thirty-six portable packsets, each weighing nine lb. are for use on locomotives or cabooses.

Equipment to be installed in 17 way-side base stations includes Bendix centralized radio control, by which each base station can be operated locally or as an unattended automatic waystation for use by the dispatcher or by operators at attended waystations. Also included in the order are seven mobile transmitter-receivers to be installed in yards.

### **LOCOMOTIVES**

The **New Zealand Government Railways** are inquiring for 20 main line diesel locomotives. Specifications are available from the New Zealand Government Trade Commissioner, 1346 Connecticut ave., N.W., Washington, D.C.

The **Northern Pacific** has ordered 33 diesel units as follows: from Electro Motive Division, General Motors Corporation, 14 1,750 hp road switchers, one 4 unit 7,000 hp freight locomotive and eight 1,200 hp switchers; from the American Locomotive Company, one 900 hp switcher and six 1,600 hp road switchers.

The NP's intention to purchase 65 diesel units for 1955 delivery was reported in *Railway Age*, November 8, page 13.

### **FREIGHT CARS**

The **Northern Pacific** has ordered 500 50 ton box cars from its own shops. The road's intention to purchase these cars was reported in *Railway Age*, November 8, page 13.

The **Erie** has ordered 50 flat cars for piggyback service from the Bethlehem Steel Company. Delivery of the cars, to cost an estimated \$550,000, is scheduled for late next January.

Two prototype refrigerator cars being manufactured for the **Saudi Arabian Government Railroad** by the Societe Gregg d'Europe, S.A. Lot, associates of the Gregg Car Company of New York, will be equipped with what are believed to be the first four two-stage low temperature refrigeration compressors to be used for railroad refrigerator cars. The compressors were built by the Worthington Corporation.

## **New Facilities**

### **PRR to Sell Air Rights Over New York Station**

The Pennsylvania and Webb & Knapp, Inc., have announced agreement on terms of an option to be taken by the latter organization to buy air rights over Pennsylvania Station in New York City. Engineering, archi-

tectural and economic studies will be prepared for several possibilities to develop the property.

If the studies are favorable and the option is exercised, the passenger station will be modernized below the street level and a new building will be constructed above it, with street level entrances and exits for the station. James M. Symes, PRR president, and William Zeckendorf, president of Webb & Knapp, said none of the plans being studied is sufficiently advanced for a definite announcement.

## **Organizations**

The **Car Foremen's Association of Chicago** will meet December 13 at the La Salle Hotel. Kermit Skeie, manager, Midwest district, Magnaflux Corporation, will discuss detailed magnetic particle testing of freight and passenger car materials.

George M. Crowson, assistant to president of the Illinois Central, has been elected president of the **Public Relations Society of America**.

At a recent meeting of the **Lima (Ohio) Traffic Club**, Harold H. Balk, general agent of the Lackawanna at Toledo, was elected president.

National and regional transportation problems will be discussed at the third **New England Institute of Transportation** at the Statler Hotel, Boston, December 10. The institute is sponsored by the New England Regional Forum of the Transportation Association of America, in cooperation with New England universities and trade organizations. Dr. George P. Baker, professor of transportation at Harvard Business School, and president of TAA, will be moderator of the morning session, which will discuss government policies that are endangering the stability of the industry. Panel members are C. J. Goodyear, traffic manager, Philadelphia & Reading Coal & Iron Co., and president, American Society of Traffic & Transportation; Charles L. Bergmann, partner, R. W. Pressprich & Co.; S. G. Tipton, general counsel, Air Transport Association of America; James F. Pinkney, general counsel, American Trucking Associations; Gordon C. Locke, executive secretary, Committee for Pipe Line Companies; Jervis Langdon, Jr., chairman, Association of Southeastern Railroads; and George W. Morgan, president, Association of American Ship Owners.

"From Horse and Buggy to Diesel Power" will be the subject of a luncheon address by Lewis O. Barrows, secretary, Liberty Mutual Insurance Company, and former governor of Maine; while Richard L. Bowditch, (Continued on page 44)



# 6 ways to save money in communications

If you are interested in saving money and, at the same time, increasing efficiency of railroad communications, this would be a good time to have a

joint review of specific problems made with Bell System engineers. Ask your Bell Telephone representative how this can be arranged, without cost.

## BELL SYSTEM PROVIDES SERVICE AT LOW COST



**TAILORED COMMUNICATIONS**—The best possible service fitted exactly to your road. You get precisely what you need—no more, no less.



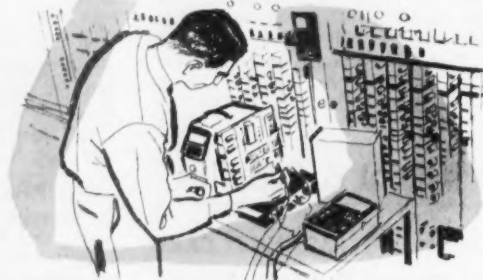
**FLEXIBLE SERVICE**—It is designed to do a job, at a location, at a time. And it can be rearranged any time your needs for communication change.



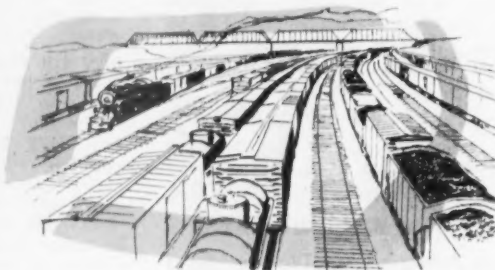
**NEWEST EQUIPMENT**—New developments in communications are available without investment of railroad capital. This keeps service at peak efficiency.



**ROUNDED EXPERIENCE**—78 years of experience in solving every communications problem goes to work to give you economical Bell System communications.



**NO MAINTENANCE HEADACHES**—Repair and replacement problems are Bell System's responsibility. This results in savings to your road.



**RAILROAD'S MONEY** is available to invest in revenue-producing projects, not tied up in communication equipment. That's another important consideration!



## BELL TELEPHONE SYSTEM

TELEPHONE    MOBILE RADIO    TELETYPEWRITER    INTERCOMMUNICATION PAGING SYSTEMS    TELEMETERING AND REMOTE CONTROL

# Questions and Answers FOR THE TRANSPORTATION DEPARTMENT

## HERE ARE THE ANSWERS TO ANOTHER RAILWAY AGE CAR SERVICE "QUIZ":

**The Problem**—as presented in the October 25 issue: A paper company, with a plant in northern New York state served by the New York Central, on a certain day had orders to ship 20 cars, as follows:

Destination	No. of Cars to Be Shipped	Delivering Carrier
New York	3	NYC
Baltimore	1	PRR
Birmingham, Ala.	1	L&N
Chattanooga, Tenn.	1	Sou
Council Bluffs, Iowa	1	CB&Q
Chicago	1	NYC
Decatur, Ill.	1	Wab
Des Moines, Iowa	1	Milw
Cleveland	1	NYC
Evansville, Ind.	1	NYC
Erie, Pa.	1	NYC
Lima, Ohio	1	NKP
Peoria, Ill.	1	NYC
Pueblo, Col.	1	C&S
Indianapolis	1	NYC
Shreveport, La.	1	T&P
Syracuse, N. Y.	1	NYC
Terre Haute, Ind.	1	NYC

Suitable cars available for loading were: AT&SF, 2; CB&Q, 1; DL&W, 1; GM&O, 1; IC, 2; M&StL, 1; NYC, 4; NKP, 1; NC&StL, 1; PRR, 1; Sou, 1; UP, 1; Wab, 1; WM, 1; Milw, 1.

The paper company's loading foreman got out his sharp pencil and figured which cars he should load to which destination so that, upon unloading, each car would be (1) on home line or (2) at a junction with the owning road.

**The question is:** Which cars did he load to each destination?

CONDUCTED BY G. C. RANDALL, district manager, Car Service Division (ret.), Association of American Railroads, this column runs in alternate weekly issues of this paper, and is devoted to authoritative answers to questions on transportation department matters. Questions on subjects concerning other departments will not be considered, unless they have a direct bearing on transportation functions. Readers are invited to submit questions, and, when so inclined, letters agreeing or disagreeing with our answers. Communications should be addressed to Question and Answer Editor, Railway Age, 30 Church Street, New York 7.

## The Answer—

The loading foreman applied the available cars as follows: Baltimore—WM; Birmingham—GM&O; Chattanooga—NC&StL; Council Bluffs—UP; Chicago—AT&SF; Decatur—Wab; Des Moines—M&StL; Cleveland—NYC; Evansville—Sou; Erie—PRR; Lima—NKP; Peoria—CB&Q; Pueblo—AT&SF; Indianapolis—IC; Shreveport—IC; Syracuse—DL&W; Terre Haute—Milw; New York—NYC (3).

We consider this a "preferred" solution because it seems to us that these applications involve a minimum of switching at destination after release. However, answers have been considered correct provided every car was on its owner's rails or at a junction point with its owner at destination, regardless of whether or not the solution agreed exactly with the "preferred" one.

A total of 352 answers had been received up to and including November 22, of which 212 were correct. Those answering represent 48 different railroads and a wide variety of jobs. There were 21 answers received from persons not in railroad service, of which 13 were correct. It is interesting that all the 18 answers received from representatives of the Car Service Division, AAR, not only were correct, but agreed with our "preferred" solution.

The most common error found was the assumption that the Union Pacific reaches Pueblo and that Peoria is a junction between the NYC and the AT&SF. The Equipment Register does not show any such connections. The nearest NYC-AT&SF connection to Peoria seems to be at Pekin, Ill.

Several roads circularized the quiz among their employees, which to some extent accounts for the large number of answers received.

The names of those sending correct answers follow:

**AMERICAN REFRIGERATOR TRANSIT COMPANY**  
F. J. Smith, assistant to superintendent transportation, St. Louis

**ATLANTIC COAST LINE**  
L. A. McLean, gang foreman, Wavcross, Ga.; I. E. Rockley, car distributor, Wilmington, N.C.

**ATCHISON TOPEKA & SANTA FE**  
T. E. Corcoran, chief clerk to agent, Independence, Kan.; F. F. Davis, assistant manager, information-reservation bureau, Los Angeles; W. P. Fiscus, revising clerk, Fontana, Cal.; Chas. Goebel, agent, Atchison, Kan.; T. F. Grose, car clerk, Pasadena, Cal.; W. R. Wagner, towerman, Colton, Cal.

**BALTIMORE & OHIO**  
R. W. Landsiedel, train dispatcher, Cincinnati.

**BANGOR & AROOSTOOK**  
B. F. Andrews, Jr., clerk, Northern Maine Jct., Me.

**BOSTON & MAINE**  
H. J. Lee, district freight agent, Worcester, Mass.; D. A. Smith, Jr., traffic representative, Concord, N. H.

**CANADIAN PACIFIC**  
G. A. Joslin, trainman, Montreal.

**CANTON**  
A. W. Bateman, assistant freight agent; C. W. Battenfield, Jr., yardmaster; F. L. Bean, conductor; G. L. Broshears, yard clerk; W. B. Crane, Ill., special representative; R. W. Dale, Jr., assistant to traffic manager; R. Jurens, agent; S. T. Kelsey, Jr., executive assistant; G. F. Knapp, yardmaster; L. M. White, yard clerk—all of Baltimore.

**CENTRAL VERMONT**  
W. E. Hatch, Sr., Albans, Vt.

**CHESAPEAKE & OHIO**  
C. W. Colman, car distributor, Saginaw, Mich.; W. L. Filkins, general agent, Huntington, W.

Va.; A. C. Gibson, trainmaster, Wyoming Yards, Mich.; P. B. Livermore, car distributor, Grand Rapids, Mich.; H. J. Southland, agent, Benton Harbor, Mich.; Whitt Ross, engine supplyman, Huntington.

**CHICAGO, INDIANAPOLIS & LOUISVILLE**  
R. L. Barnard, train dispatcher, Lafayette, Ind.; W. R. Jarvis, operator, Michigan City, Ind.; W. M. Clements, agent, Lafayette; E. S. Royster, agent, Monticello, Ind.; H. E. Scheigert, yardmaster, Indianapolis; E. E. Thompson, agent, Michigan City; F. E. Tindall, agent, Bloomington, Ind.; J. R. Wootan, agent, Bedford, Ind.

**CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC**  
F. B. Kibble, car distributor, Auburn, Wash.; Tom Quinn, Seattle; W. L. Sarokanoff, chief clerk to superintendent transportation, Seattle.

**DELAWARE, LACKAWANNA & WESTERN**  
W. F. Gale, traffic representative, Philadelphia; W. Y. Nagle, Jr., agent, Berkeley Heights, N. J.

**DELAWARE & HUDSON**  
C. W. Christen, clerk, Albany, N. Y.; E. W. Rasmussen, traffic representative, Boston.

**DETROIT, TOLEDO & Ironton**  
D. W. Benjamin, yard clerk, Flat Rock, Mich.; M. E. Bennett, yardmaster, Flat Rock; R. C. Berner, car distributor, Dearborn, Mich.; L. S. Fisher, yard clerk, Springfield, Ohio; J. D. Galla, car accountant, Dearborn; E. W. Kruse, Sr., general yardmaster, Flat Rock; E. W. Kruse, Jr., yardmaster, Flat Rock; V. J. Pickens, yardmaster, Flat Rock; W. R. Walker, assistant general yardmaster, Flat Rock; H. G. Wilkie, yard clerk, Flat Rock; W. L. Young, yardmaster, Flat Rock.

**ERIE**  
W. P. Arnold, clerk, Warren, Ohio; K. C. Bissell, chief car distributor, Cleveland; E. A. Blair, agent, Olean, N. Y.; H. H. Brown, agent, Weehawken, N. J.; J. H. Byers, agent, Cleveland; D. A. Childs, general clerk, Olean; D. E. Chaney, clerk, Meadville, Pa.; J. G. Connelly, agent, North Beraen, N. J.; J. T. Corbett, trainmaster, Jersey City, N. J.; J. K. Cubby, agent, 28th st., New York; V. J. Derner, agent, Duane St., New York; K. W. Dingle, yardmaster, Meadville; G. J. Fordham, agent, Bear Lake, Pa.; P. Farned, clerk, Niagara Falls, N. Y.; E. J. Garafano, agent, Nutley, N. J.; R. B. Gardner, agent, Brockway, Pa.; T. M. Gilbert, clerk-stenographer, Newark, N. J.; D. H. Gorman, car distributor, Marion, Ohio; C. C. Gruber, chief clerk to trainmaster, Marion; W. L. Hillmiller, chief clerk, Salamanca, N. Y.; Wm Hishman, chief yard clerk, Meadville; Eva L. Huston, clerk-steno, Bradford, Pa.; D. G. Jones, agent, Bradford; W. M. Joyce, rate clerk, Lockport, N. Y.; E. H. LeVaughn, clerk, Lockport; R. Mackler, clerk, Jamestown, N. Y.; L. M. Moore, car distributor, Salamanca; Jos. Moses, transportation clerk, Cleveland; J. T. Murphy, inspector operations, Cleveland; J. C. Murray, clerk, Lockport; A. H. Pokrandt, car distributor, Buffalo; E. J. Reed, clerk, Niagara Falls; P. R. Rice, general yardmaster, Marion; T. C. Rooney, chief car distributor, Jersey City; W. J. Shapley, yard clerk, Meadville; H. P. Sloan, yard clerk, Olean; G. J. Snider, clerk, Youngstown, Ohio; Miss Sivavart Toregian, clerk, Meadville; L. B. Tullar, rate clerk, Olean; J. Welsh, general foreman, Weehawken.

**GRAND TRUNK WESTERN**  
W. H. Miller, agent, Cass City, Mich.; D. C. Page, telegrapher, Lowell, Mich.

**GREAT NORTHERN**  
E. R. Anderson, yard clerk, Klamath Falls, Ore.; W. E. Back, accountant, Seattle; A. V. Bell, auditor freight receipts, St. Paul; A. H. Benson, assistant agent, Superior, Wis.; G. L. Brennan, car distributor, Whitefish, Mont.; F. P. Brew, general yardmaster, Superior; D. H. Dixon, assistant car distributor, Tacoma, Wash.; A. L. Evans, trainmaster, Hilliard, Wash.; M. W. Foster, agent, Klamath Falls; E. J. Gardner, trainmaster, Portland, Ore.; K. W. Knapton, chief dispatcher, Whitefish; F. H. Moore, trainmaster, Whitefish; W. T. Murray, division car distributor, Spokane, Wash.; R. J. Purviance, agent, Crookston, Minn.; J. B. Reese, agent, Resau, Minn.; J. A. Whitaker, agent, Whitefish.

**GREEN BAY & WESTERN**  
R. B. Wilson, director, New York.

**ILLINOIS CENTRAL**  
G. C. Burkard, clerk, Gifford, Ill.

**KANSAS CITY SOUTHERN**  
L. V. Crawford, chief clerk, Shreveport, La.

**LOUISVILLE & NASHVILLE**  
J. E. McShane, clerk-steno, Corbin, Ky.

**MISSOURI PACIFIC**  
W. O. Zunker, rate clerk, Chicago.

**NEW YORK CENTRAL**  
T. W. Luebking, clerk, Coldwater, Ohio; L. A. Nugent, agent, Benton Harbor, Mich.; C. W. Phillips, clerk, general yardmaster, Terre Haute, Ind.; S. D. Popeck, agent, Malone, N. Y.

**NEW YORK, NEW HAVEN & HARTFORD**  
J. M. Finch, superintendent car service, New Haven, Conn.

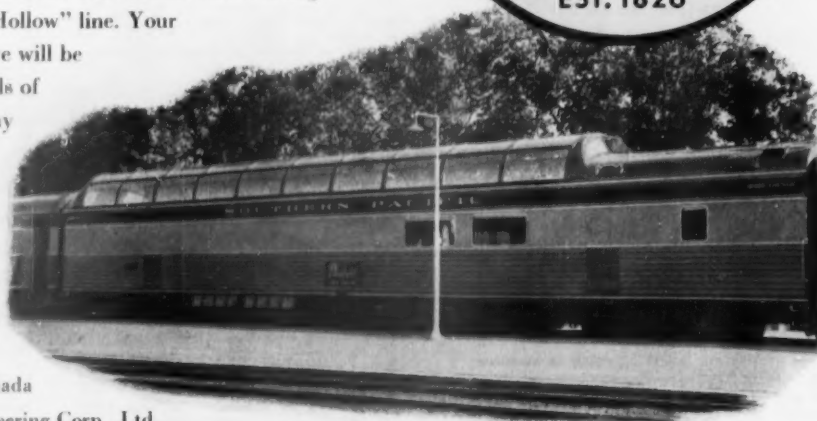
(Continued on page 13)

# New S·P Two-Level Dome Car Has Luxurious "Sleepy Hollow" Seating



Southern Pacific has developed something unique in dome cars . . . every seat in their modern, wonderfully spacious car shown here has a dome seat, even if it's on the lower level! Unique, too, is the fact that this new dome car was built right in SP's own Sacramento shops. Heywood's fine manufacturing facilities and "know-how" were utilized by SP to equip this car with the most comfortable seating possible . . . the famous "Sleepy-Hollow" line. Your Heywood-Wakefield representative will be happy to give you complete details of the "Sleepy-Hollow" and the many other Heywood-Wakefield seats available to bring outstanding comfort to your passengers.

Heywood-Wakefield  
Transportation Seating Division  
Gardner, Mass., Orillia, Ontario, Canada  
In Canada: Railway & Power Engineering Corp., Ltd.





(Continued from page 13)

#### NIAGARA JUNCTION

E. Maull, Jr., agent, Niagara Falls, N. Y.

#### NORFOLK & PORTSMOUTH BELT LINE

J. H. Dixon, clerk, Portsmouth, Va.

#### NORFOLK & WESTERN

H. L. Bartholomew, agent, Portsmouth, Ohio.

#### NORTHERN PACIFIC

B. L. Doherty, clerk; J. N. Grove, clerk; C. A. Jaeger, clerk; I. E. Ray, agent—all of Seattle.

#### PENNSYLVANIA

R. M. Decker, gang foreman, Delmar, Del.; E. E. Hilligoss, Cincinnati; Wm. Knell, agent, Ada, Ohio; B. F. Koepke, clerk, Chicago; L. P. McKnett, agent, Cambridge, Md.; J. P. Shuman, agent, Waynesboro, Pa.; A. E. Tague, joint agent (B&O), Altamont, Ill.

#### READING

R. R. Berry, Jr., extra agent, Muncy, Pa.; L. C. Bosler, Jr., district freight agent, Philadelphia; J. P. Brubaker, agent, Columbia, Pa.; L. H. Burger, agent, Lititz, Pa.; F. L. Carleton, clerk, Philadelphia; H. A. DeWalt, agent, Willschickon st., Philadelphia; W. R. Hazelton, terminal agent, Philadelphia; F. K. Kendall, general agent, Pottstown, Pa.; G. J. Libriz, clerk, Philadelphia; F. A. Mariani, clerk, Read Valley, N. J.; J. V. McGaughey, chief clerk, Philadelphia; E. L. McIntire, car distributor, Philadelphia; H. McKinne, agent, Manheim, Pa.; S. W. Meyer, traveling car agent, Reading, Pa.; C. S. Reynar, chief clerk, Ambler, Pa.; G. M. Sassaman, district freight agent, Allentown, Pa.; A. Schneider, Jr., agent, Ambler; J. W. Surak, clerk, Shamokin, Pa.; E. F. Thomas, clerk, Newberry Jct., Pa.; J. B. Warrington, assistant superintendent transportation, Philadelphia.

#### RUTLAND

R. E. Davine, car accountant, Rutland, Vt.

#### ST. JOHNSBURY & LAMOILLE COUNTY

F. H. Waring, assistant general freight and passenger agent, Montpelier, Vt.

#### ST. LOUIS-SAN FRANCISCO

P. W. Myers, secretary to superintendent, Chaffee Mo.; C. C. Roberts, station accountant, Tulsa, Okla.

#### SOO LINE

G. J. Spanbauer, assistant agent, Oshkosh, Wis.

#### SOUTHERN

A. P. Ford, agent, Culpepper, Va.; R. L. Sproul, retired superintendent car service, Atlanta.

#### SOUTH BUFFALO

D. J. Hasmer, supervisor purchases and stores, Lackawanna, N. Y.

#### SOUTHERN PACIFIC

E. N. Brown, assistant to freight traffic manager, New York; D. W. Speer, assistant director training, Los Angeles.

#### TERMINAL RR ASSOCIATION OF ST. LOUIS

H. F. Lauber, chief clerk; L. D. Potter, secretary to superintendent motive power and equipment—both of St. Louis.

#### TEXAS SOUTH-EASTERN

J. F. Robison, chief clerk accounting department, Daboll, Tex.

#### UNION PACIFIC

K. N. Halvorsen, clerk, Seattle; R. D. Wright, assistant terminal superintendent, Pocatello, Idaho.

#### WABASH

J. M. Faherty, clerk; M. W. Pegan, car accountant; C. O. Wegmann, traveling car service inspector—all of St. Louis.

#### WESTERN PACIFIC

A. M. King, inspector transportation; George Mesch, chief clerk traffic dept.; A. P. Murphy, agent—all of San Francisco.

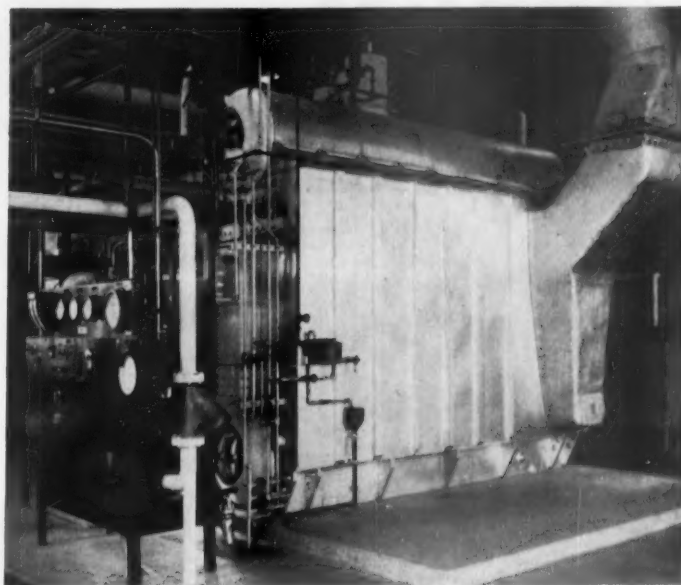
#### CAR SERVICE DIVISION, AAR

C. D. Barker, military transportation section, Washington, D. C.; C. W. Bierdeman, car service agent, St. Louis; C. W. Doerr, car service agent, Pittsburgh; T. W. Flickinger, district manager, St. Louis; J. F. Farrester, car service agent, New York; A. N. Gantzer, district manager, Pittsburgh; G. M. Gordon, car service agent, Washington; C. A. Lauby, assistant to manager, Closed Car Section, Washington; C. V. Lyon, car service agent, Washington; J. J. McKeene, car service agent, New York; A. V. Mannery, car service agent, Seattle; R. F. Murphy, car service agent, New York; F. M. Quinn, car service agent, Baltimore; H. G. Randall, district manager, Boston; J. F. Reilly, assistant to vice-chairman, Washington; J. S. Swift, car service agent, Youngstown, Ohio; B. L. True, car service agent, Portland, Ore.; S. H. Whitehead, car service agent, Philadelphia.

#### NON-RAILROAD RESPONDENTS

C. L. E. DeGangue, Johns-Manville Company, Manville, N. J.; C. J. DeVilbiss, dispatcher, Wabash, Frisco & Pacific Assn., St. Louis; J. S. Fuller, Washington, Ill.; H. H. Harwood, Jr., Columbia University, New York; Nelson Hickok, traffic manager, Western Paper Converting Company, Salem, Ore.; Gordon Keith, Franklin Park, Ill.; Fred Kiesel, chief engineer, Wabash, Frisco & Pacific Assn., St. Louis; Fritz Lehmann, Oberlin College, Oberlin, Ohio; E. H. Morse, Palo Alto, Cal.; N. E. Ottosen, traffic manager, Associated Plywood Mills, Inc., Eugene, Ore.; W. C. Pletz, Cincinnati; R. L. Stimmel, Lima, Ohio; R. W. Thompson, Chicago.

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The Product of a Company Outstanding  
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All Types of Steam-Generating Fuel-Burning and Related Equipment

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Compact, easily cleaned stainless steel galleys help cut the cost of dining car operation, protect passenger health.

The great majority of steel's hundreds of applications in modern, high-speed trains demand one or all of three specific qualities: corrosion resistance, beauty and high strength.

That's why today, from locomotive to observation car, more and more railroads are saying, "make it stainless."

Virtually indestructible by corrosive action, stainless steels defy the effects of air, water, food, fumes and chemicals. They can be machined, formed and fabricated—and their surfaces pol-

ished satin-smooth or mirror-bright. Grades of stainless are available to meet a wide range of mechanical and heat-resistant requirements.

Stainless steels are cutting operating and maintenance costs on an ever-growing number of railroads, bringing new beauty and safety to an ever-growing number of applications. For complete information contact your supplier.

The finest stainless steels are made with Vancoram ferro chromium, ferrochrome-silicon and ferro titanium.

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Make it better...make it stainless!



Producers of alloys, metals and chemicals

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Average freight car has only  
1 hot box every 12 years

*You can make it better than 1 in 24 Years  
with **MAGNUS R-S JOURNAL STOPS***

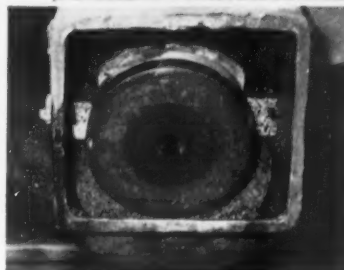
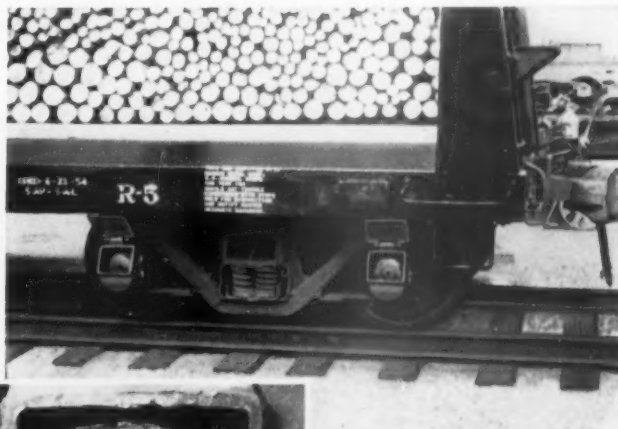
*New development makes  
waste pack an efficient  
lubricator at the same time  
it reduces maintenance  
and servicing requirements*

Do automobiles or trucks ever run 12 years without a road failure of a bearing? Chances are they don't—especially road-haul trucks. Very often the trucks themselves don't last that long.

Well, railroad solid bearing freight cars do even better than that now—and these cars average 20 years old. In 1953, there were only 156,328 set-offs for the 2 million-odd freight cars operated over Class I railroad lines. That's only one set-off for each 12.8 cars per year—equivalent to each car having one hot box every 12.8 years.

#### How to Double This Good Record

Indications are that with the Magnus R-S Journal Stop railroads can cut the number of set-offs in half—double the car miles per hot box of any kind, and the miles per bearing too. Why? Because from 50% to 70% of all hot boxes are caused by waste, and this new low-cost device makes the conventional waste pack an efficient lubricator. First, it positively keeps the bulk packing where it belongs. Second, the bearing can't be cocked off its seat on the journal to trap lint or short strands beneath the bearing crown. And third, during braking or impacts the box can't rise to compress packing and interrupt the oil feed. Within given limits you main-



Pulpwood car with separable boxes and Magnus R-S Journal Stops installed. Inset shows integral cast box installation with packing in normal position after 11½ mph impact test.

tain constant journal-to-packing pressures, and you get a constant feed of oil.

On one road, R-S Journal Stops have been in service for over two years. *There hasn't been a bearing replacement—much less a hot box.* And that's only half the story. To get it all, write to Magnus Metal Corporation, 111 Broadway, New York 6; or 30 E. Jackson Boulevard, Chicago 4.

**MAGNUS**

# Solid Bearings



*Right for Railroads  
...in performance...in cost*

**MAGNUS METAL CORPORATION** *Subsidiary of* **NATIONAL LEAD COMPANY**



## KEY TO RAILROAD PROGRESS...ELECTRICAL PIONEERING



# HOW RAILROADS SPEED GOODS TO YOUR DOOR

With the help of latest General Electric equipment, freight classification yards put trains together fast

**TO HELP AMERICA CARRY OUT** its daily transfer of products from one part of the country to the other, railroads rely on the smooth operation of their giant classification yards. In these large "sorting racks," trains from all parts of the country are broken up, the cars classified according to destination, and then made up into trains again and sent on their way to you.

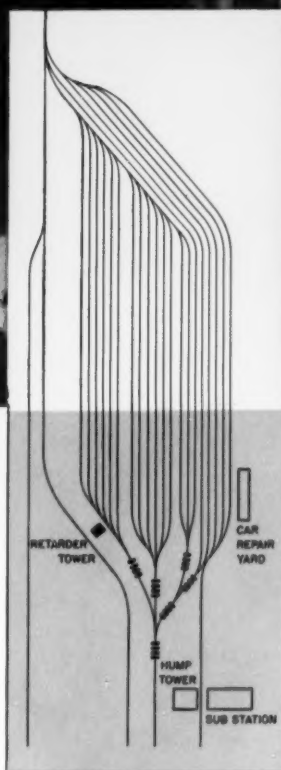
In less than an hour, a car containing television sets, for example, can be separated from the train which picked it up at the factory, and made up with other cars into a train destined for your town. Shipments of fruit from Florida or California, carefully packed in refrigerator cars, might tie onto the same train.

**OPERATING AROUND THE CLOCK**, some of these great classification yards send through up to 15,000 cars a day, a job that would be impossible without modern electrical equipment—such

as that designed by General Electric especially for railroad use.

For instance, today, freight cars rolling down from the "hump" are slowed up by retarders electrically controlled from towers. Formerly cars were braked manually by brakemen riding each one. Now giant floodlights push back the dark—make the yard at night as bright as a well-lighted baseball park. Snowmelters keep switches operating freely, even during blizzards. Other General Electric products—from diesel-electric locomotives to transformers for distributing power—help the railroads deliver the nation's goods swiftly and smoothly.

**TODAY, GENERAL ELECTRIC ENGINEERING AND RESEARCH** are constantly working to develop new and better products to further railroad progress—thus enabling the railroads to meet more easily the needs of America's expanding industry. General Electric Company, Schenectady 5, New York. 152-53



**PORTION OF A TYPICAL CLASSIFICATION YARD** illustrated in color above represents the area within the blue rectangle on the yard diagram at left. Electrical equipment plays a major role throughout the yard. Diesel-electric switching locomotive **1** pushes cars up the "hump" where activities are checked constantly through talkback boxes **2** by hump conductor. Meanwhile, luminaires **3** and spotlights light hump area for uncoupling cars. In hump tower **4** operator throws switches in yards electrically to control route of cars. On top deck **5** terminal yardmaster employs two-way radio system and TV to keep in communication with all yard operations. Operator in retarder tower **6** controls retarders **7** to slow down cars, help prevent crashes, damage to freight. Electricity controls track switches, supplies heat to snowmelters **8**. Floodlights **9** make yard bright as day for 'round-the-clock operation, easier traffic handling — give better protection from theft. High-voltage power from utility lines is stepped down at substation **10** to intermediate voltage, then transmitted to point of load where distribution transformers **11** step it down again for use by motor-driven compressors in compressor house **12**. Electronic signals on cross-over tracks clear way across yard for outgoing freight train **13** at far left.

*Progress Is Our Most Important Product*

**GENERAL  ELECTRIC**

THIS IS THE THIRD in a series of messages appearing in news and railroad magazines to give the public a better understanding of the vital role played by the nation's railroads in our everyday lives.

**How to protect  
a \$1-million  
investment  
for just \$4<sup>95</sup>!**



**THE MILWAUKEE ROAD'S** Central Sign Shop is typical of the modern, efficient shops now in operation on 14 Class One roads. This shop turns out more than 1,000 reflectorized signs a month using "Scotchlite" Reflective Sheeting and the 5' x 12' high-speed vacuum applicator. Just *eight minutes* in the applicator and a sign is ready for use!

The term "Scotchlite" is a registered trademark of Minnesota Mining and Manufacturing Company, St. Paul 6, Minn. General Export: 122 E. 42nd St., New York 17, N.Y. In Canada: London, Ontario, Canada.

**A LUXURY STREAMLINER** speeds through the black, rainswept night. Up ahead the engineer knows there's a 40-mile curve. But where? And when to let up on the throttle? Suddenly, the headlamp catches a flash of yellow . . . a reflectorized speedboard. The throttle goes forward . . . the brakes ease on . . . in plenty of time for the \$1,000,000 train, with its valuable cargo, to round the curve smoothly and safely—thanks to just \$4.95 invested in a sign of "Scotchlite" Reflective Sheeting!\*

### Visible at night ½ mile away!

Wide-Angle Flat-Top "Scotchlite" Sheeting, as used by the Milwaukee Road on the speedboard shown, has the extra brightness and greater target value to provide nighttime recognition at a half-mile. This extra reflective power is effective even in extremely heavy rain. Furthermore, the long-term durability of "Scotchlite" Sheeting makes it the most *economical* sign surfacing material you can use. Couple this long life with the Central Sign Shop Method of fabricating signs, and you have modern signs designed for modern needs, manufactured in the most economical way possible.

Why not let us tell you more about cost-saving, investment-protecting "Scotchlite" Reflective Sheeting? We'll also give you complete information on the Central Sign Shop System. Just write: Minnesota Mining and Mfg. Co., Dept. RA-124, St. Paul 6, Minn.

\*\$4.95 is the average cost of a Speedboard using "Scotchlite" Reflective Sheeting as produced by the Milwaukee Road.

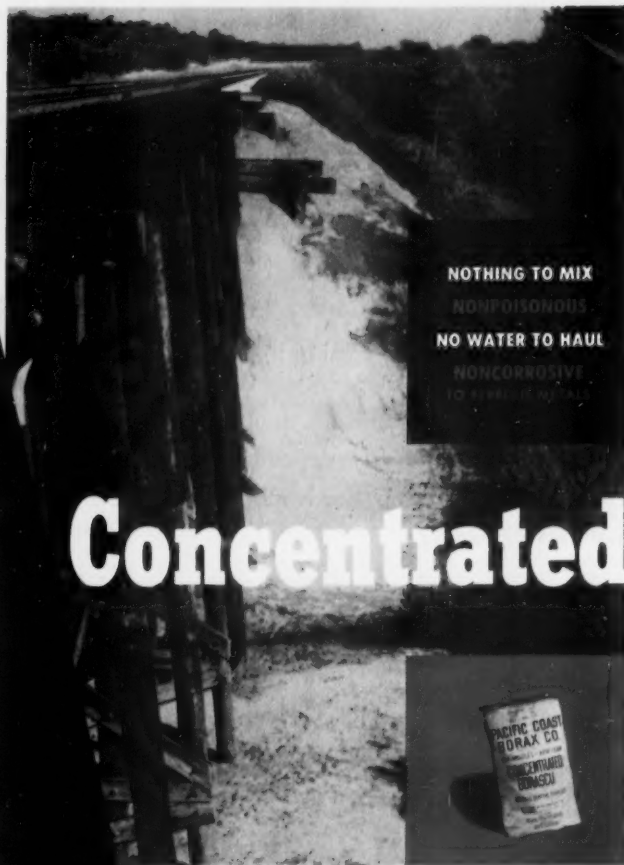
Reg. U. S. Pat. Off.  
**SCOTCHLITE**  
BRAND  
**REFLECTIVE SHEETING**





**Where hand scalping costs are too high!**

*Effectively* **Stop Weeds**  
*this low-cost thrifty way!*



NOTHING TO MIX  
NONPOISONOUS  
NO WATER TO HAUL  
NONCORROSIVE  
TO RUSTING METALS

# Concentrated Borascu<sup>®</sup>

**SAVE Up to 85% of your grassing costs!**

Put Concentrated Borascu Weed Killer about your timber structures, yards, tie piles, sidings and buildings to get greatest protection from brush fires at lowest cost! Weeds-grasses are stopped, leaving nothing but bare ground wherever Concentrated Borascu is applied properly. Don't sacrifice your costly man-power on grassing...this modern method is thrifter!

**When Borascu's in...weeds stay out!**

Weeds and grasses just *can't* grow on soil where Borascu has been applied! And such soil remains sterile for long periods because this inorganic borate doesn't break down. Applications are simple; there is nothing to mix...no water to haul and the most unskilled laborer can do the job. You'll find it pays to use Concentrated Borascu.

*Saves you Dollars!*

*Kills Weeds for Pennies!*

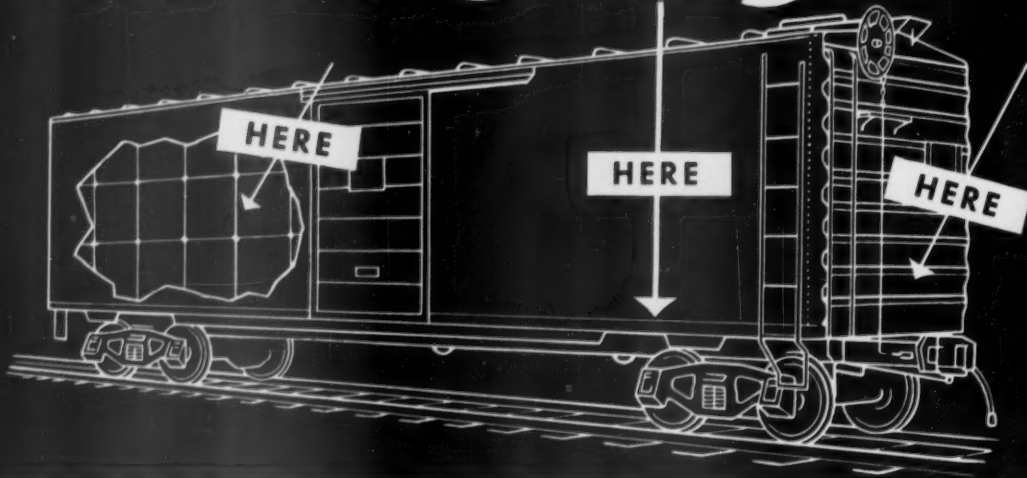


**PACIFIC COAST BORAX CO.**

DIVISION OF BORAX CONSOLIDATED, LIMITED

630 SHATTO PLACE, LOS ANGELES 5, CALIFORNIA

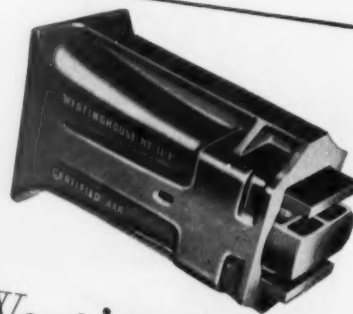
# Where a Good Draft Gear ***SAVES***...



## ***...and Year after Year!***

Cardwell Westinghouse is in the business of saving for America's railroads. That's the whole purpose of the Westinghouse Friction Draft Gear... to *save* needless destruction of valuable railroad equipment... *save* important lading and cut unnecessary damage claims. The Westinghouse Friction Draft Gear is a sturdy, dependable piece of equipment. Research and development will always keep Cardwell Westinghouse products abreast of the needs of modern railroading.

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Canadian Cardwell Co. Ltd., Montreal

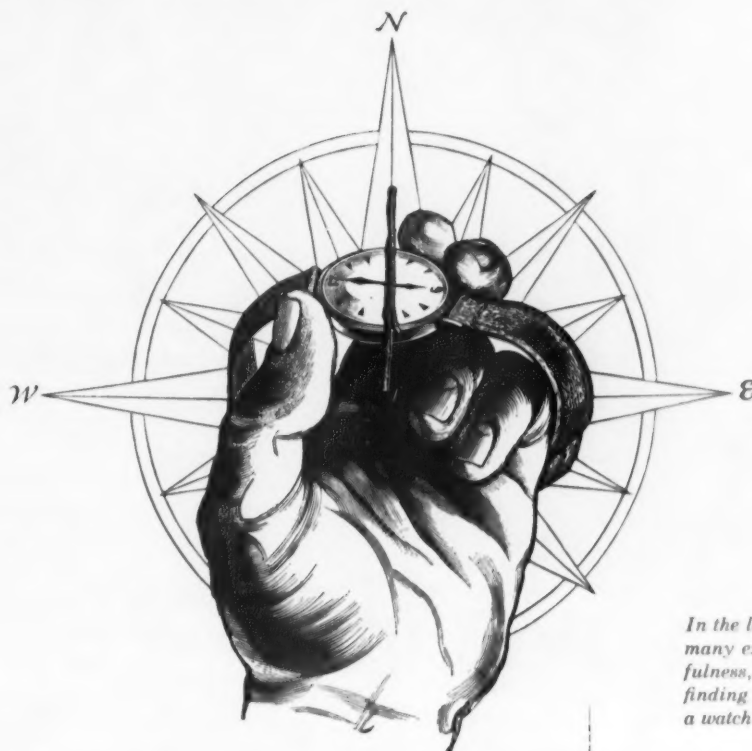


**Westinghouse**  
FRICTION DRAFT GEAR  
Type NY-11-F  
Certified A. A. R.

*Specify*  
**CARDWELL  
WESTINGHOUSE**

• Cardwell Draft Gears • Westinghouse Draft Gears • Cardwell Friction Bolster Springs •

# RESOURCEFUL



*In the lore of woodsmen are many examples of resourcefulness, such as the method of finding direction with only a watch and a twig.*

**T**he banking requirements of American industry are varied and complex, often calling for resourcefulness far beyond the routine. Today, The Bank of New York's commercial business covers hundreds of industries and extends to each of the 48 states and many foreign countries.

You will find The Bank of New York alert to your needs, progressive in outlook and responsive in meeting special situations that require exceptional effort and cooperation.

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Deposit Accounts  
Foreign Transactions  
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*New York's First Bank • Founded 1784*

Main Office: 48 WALL ST. ☆ Uptown Offices: 530 FIFTH AVE. ☆ MADISON AVE. AT 63rd ☆ MADISON AVE. AT 73rd

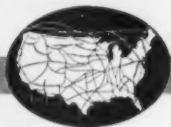
Member Federal Deposit Insurance Corporation



*matched men, machines and*



# *materials build cars for the*



## **GREAT AMERICAN RAILWAY** *System*

You can see them wherever you go—the PS-1 Box Cars, PS-2 Covered Hopper Cars and the PS-3 Hopper Cars “built to serve best on the Great American Railway System.”\*

Their outstanding performance is the result of car building which matches men, machines and materials.

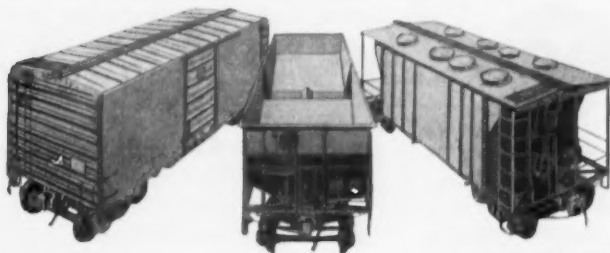
Trips through the vast Pullman-Standard freight car shops at Butler, Pa., Bessemer, Ala. and Michigan City, Ind., convince railroad executives of the unsurpassed quality and economy advantages effected by this unusual combination of production facilities.

By applying the skills of specially trained craftsmen to specific operations, better workmanship is assured. By utilizing job-designed tools, dies and jigs at each phase, more economical production is obtained. And by combining these elements with research tested materials, rugged strength, without weight penalties, is provided.

The in-service reports by Pullman-Standard field engineers prove the ability of these cars to earn more ton miles of revenue at lower cost per year of service. If you are interested in the modern trend in freight cars, write for a copy of the booklets describing the PS-1, PS-2 and PS-3.

\*A typical box car moves, in one year, on 39 different roads, including two or more trips on 24 roads. (A.A.R. data)

### *Built to serve best on the* **GREAT AMERICAN RAILWAY SYSTEM**



PS-1 BOX CAR

PS-3 HOPPER CAR

PS-2 COVERED HOPPER

YOUR NEEDS CREATE THE PULLMAN “STANDARD”

# **PULLMAN-STANDARD**

**CAR MANUFACTURING COMPANY**

SUBSIDIARY OF PULLMAN INCORPORATED

79 EAST ADAMS STREET, CHICAGO 3, ILLINOIS

BIRMINGHAM, PITTSBURGH, NEW YORK, SAN FRANCISCO, WASHINGTON





**NATIONAL OIL SEALS help**  
***keep the roll*** in roller freight

National Oil Seals are vital to the smooth, trouble-free operation railroads enjoy with roller bearing journal boxes. Mounted inside the journal box, these precision seals keep lubricant in—dirt, dust and water out. Uniform sealing is assured under all conditions, even winter blizzards, desert sand storms or immersion of the journal in water.

Like roller bearing journal assemblies themselves, National Oil Seals are rolling in over 85,000 freight car

journal boxes; rolling millions of miles without malfunction or replacement. They are playing an important role in the success of roller bearing railway journals—and the elimination of costly hot boxes.

**NATIONAL MOTOR BEARING CO., INC.**

General Offices: Redwood City, California. Sales Offices: Chicago, Cleveland, Dallas, Detroit, Downey (Los Angeles County), Milwaukee, Newark, Van Wert, Wichita. Plants: Redwood City, Downey and Long Beach, California; Van Wert, Ohio.



Original equipment on cars, trucks, buses, tractors, railway rolling stock, machinery and appliances.

1136



# The Engineer's Report

CASE HISTORY  
RPM DeLo Oil R.R.  
LUBRICANT

Western Pacific R.R. Co.,  
FIRM

## Special oil maintains high average mileage record!



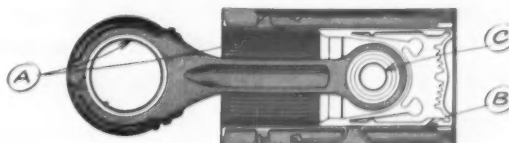
1776 CYLINDER ASSEMBLIES make up the 111 diesels in road freight service on the Western Pacific R.R. These units, as well as all passenger locomotives on the line, are lubricated with RPM DELO Oil R.R. Maintenance records of several years on freight locomotives show following average actual miles on parts removed for any reason: wristpins and bushings, 413,675 miles; pistons, 376,018 miles; liners, 354,101 miles. A representative assembly is shown in insert, just as it appeared after 476,497 actual freight miles. Note cleanliness of parts and free rings—typical of Western Pacific's experience with RPM DELO Oil R.R., the standard on the line since 1949.

FOR MORE INFORMATION about petroleum products of any kind or the name of your distributor, write or call any of the companies listed below.



TRADEMARK "RPM DELO" REG. U. S. PAT. OFF.

### How RPM DELO Oil R.R. prevents wear, corrosion, oxidation



- A. Special additive provides metal-adhesion qualities... keeps oil on parts whether hot or cold, running or idle.
- B. Anti-oxidant resists deterioration of oil and formation of lacquer... prevents ring-sticking. Detergent keeps parts clean... helps prevent scuffing of cylinder walls.
- C. Special compounds stop corrosion of any bushing or bearing metals and foaming in crankcase.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso  
THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado



## paint-up clean-up center for GATX tank cars

Forty tank cars can be serviced in this paint shop at one time. Every surface—interior and exterior—that can be painted, sprayed or brushed gets its protective covering here. After the car has gone through the mechanical department for necessary maintenance and repair work the important car reporting marks, advertising decoration and other stencilled information are applied. These surface finishes applied at the General American car repair shops increase the usefulness of the 48,000 GATX tank cars and keep cars available for duty.

To keep the fleet rolling, General American's more than 30 car repair shops work with the Engineering and Traffic departments to give shippers more dependable service for transporting liquids in bulk.

Car repair shops  
throughout the U. S. A.



GENERAL AMERICAN TRANSPORTATION CORPORATION  
135 South La Salle Street, Chicago 90, Illinois  
Offices in principal cities

## What Kind of Freight Cars?

Traditionally, railroaders dislike "special" cars. Anything which tends to make a freight car more expensive to build or maintain, which makes it less generally useful, or which builds up empty mileage, has always been anathema to the operating and mechanical department officer. The kind of equipment the railroads use, however, has a vital effect on accounts which are just as important as operating and equipment costs. One of them is on the income side—freight revenues. The other is on the outgo side—loss and damage payments.

David E. Smucker, president of the Detroit, Toledo & Ironton, has addressed himself recently to the complex problem of putting these factors together. His major premise is that, if the railroads require shippers to spend more protecting their shipments from impact than do competing carriers, the railroads automatically exhibit an inherent disadvantage. "If the shocks inherent in our form of transportation require the provision of expensive blocking, bracing and dunnage, . . . this expense is added to our freight charge before comparison with charges of other forms of transportation." While "careful handling" programs are worth while "it is futile to even suggest that damage could be minimized if we didn't load the cars so heavily or didn't handle so many cars in a train." Longer trains and higher speeds are part of the railroads' economic package.

One answer, according to the DT&I president, is to take the burden of protecting against impact off the individual shipment and put it into "relatively inexpensive appurtenances which can be used many times—thus spreading the cost over many loads."

As a major originator of auto parts, the DT&I is in a good position to judge the value of so-called "single-purpose" cars. Its president asserts that by the use of special interior equipment, the railroads "have retained a volume of traffic so highly susceptible to damage as to make railroad transportation almost prohibitive under any other conditions."

Mr. Smucker is particularly aware that such special equipment costs a lot of money. DT&I revenues could not support all of these costs which benefited all the roads which participated in the traffic, but the other roads have assumed a share

in the extra costs in proportion to the revenue they earn from it. "Through the operation of this simple and equitable plan all the railroads have benefited."

This traffic brings the roads at least \$250 million in gross revenues yearly. An investment of about \$20 million in the interior equipment of automobile parts cars enables the roads to handle this business with a damage ratio of about 17 cents per \$100 of revenue—lower than the claim-to-revenue ratio of any other commodity classification in 1953, including coal and lumber. Mr. Smucker estimates that the roads saved almost \$3½ million in claims in 1953 by moving parts in cars designed to minimize transit damage.

Mr. Smucker also deals with the problem of one-way cars. He reminds the opponents of special purpose equipment:

"There is mighty little coal moved from Detroit to points in Kentucky and West Virginia. Stock cars don't get much of a load going back to Montana and Idaho and Texas and Oklahoma. We don't make many refrigerator car shipments into the Imperial Valley or into the Indian River citrus country in Florida, and loaded covered hoppers into the cement districts are rather rare. We have found it commercially expedient in rather recent years to build covered hoppers for dry bulk commodities which require protection from the weather and dump bottom container cars for loads of dolomite and other traffic on which competition forced us to exert our inherent advantage.

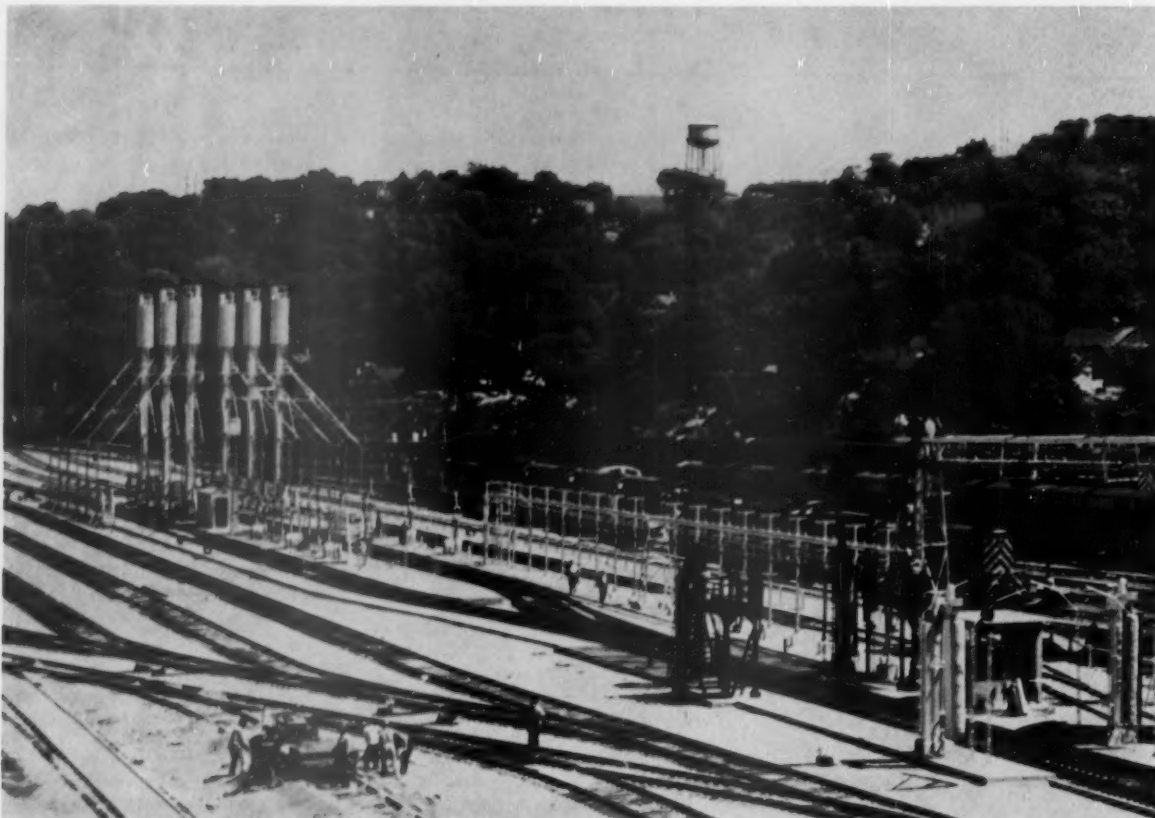
"I, for one, would much rather move a car loaded in one direction and empty in the opposite one for ever and a day, than to have it stored along my railroad because my shippers found it more expedient to use motor trucks."

Different diseases require different remedies. This paper does not suggest that single-purpose cars are the answer to most of the disabilities of the railroads in impact protection requirements. Obviously, the most suitable vehicle is a car which combines:

- (1) Lading protection adequate to withstand the inescapable shocks of economical railroad movement,
- (2) Ease of loading for the shipper, and
- (3) Versatility to fit the car for the largest possible range of commodities.

The cost of such equipment cannot be considered as though it existed in a vacuum. It must be related to income-getting and to claims saving. Again, to quote Mr. Smucker: "The \$92½ million we paid out last year for carload claims can't all be saved. But if only 10 per cent of it could be, and at the same time we were able to recapture some of the business that is moving against us by very narrow margins, we would have a tidy sum of money to invest in additional equipment to save additional amounts and to recover more business."





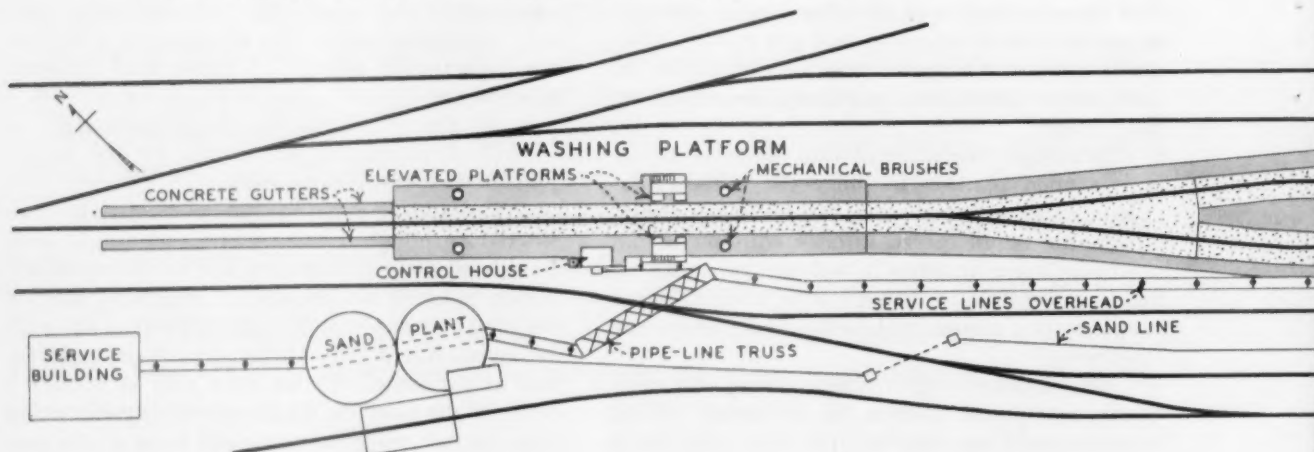
SERVICING OPERATIONS are divided into three principal groups: Sanding; fueling, watering and lubrication; and washing. Engines enter at sanding station (left) and

exit from washer platform (right). Tracks in left foreground are a portion of 16-track storage and ready yard adjacent to the new diesel shop.

## ARGENTINE DIESEL FACILITIES — Part II

# Speedy Locomotive Servicing

Three-track layout gives production-line handling to engines through sequence of sanding, fueling, watering and cleaning operations



LAYOUT of servicing facilities includes three tracks. The two used by road engines converge into a single track

through the washer platform, while a third track, bypassing the washer, is used primarily by switch engines.

Complete servicing of three-unit diesel locomotives with a minimum number of movements—this was the Santa Fe's goal in designing the outdoor servicing facilities at its new Argentine diesel terminal\* in Kansas City. After observing operations on these servicing tracks, one has no doubt that this goal was reached. On the average, locomotives are able to move through the entire servicing line in about ten minutes per unit, and with only two stops.

The new servicing layout is located along the south side of the diesel terminal on leads extending directly from main Argentine yard tracks and main lines. All incoming locomotives are routed through the servicing line upon arrival at Argentine. After servicing, the units are moved to storage or ready tracks or delivered to the diesel shop for further attention when required.

Servicing at the outdoor installation includes filling with sand, fuel, boiler water, radiator water and lubricating oil, in addition to truck and body washing. The facility is laid out on three tracks. The two used by road engines converge into a single track passing through the mechanical body washers, while the third track, used principally for switch engines, bypasses the washers.

#### Six Sand Towers Used

At the east end of the three tracks, where incoming engines arrive, are six Fairbanks-Morse sanding towers, three in each of the intertrack spaces. These towers are spaced 50 ft apart so a three-unit locomotive can be spotted on any one of the three tracks and have sand boxes filled without respotting. Each track is supplied with six sand hoses on each side. Sanding is done from elevated steel walkways along each side of each track. The walkways are equipped with small retractable platforms at all hose locations to permit the attendants to stand close to the locomotive while sanding. The platforms automatically retract when the attendant steps off, thus maintaining the required side clearance.

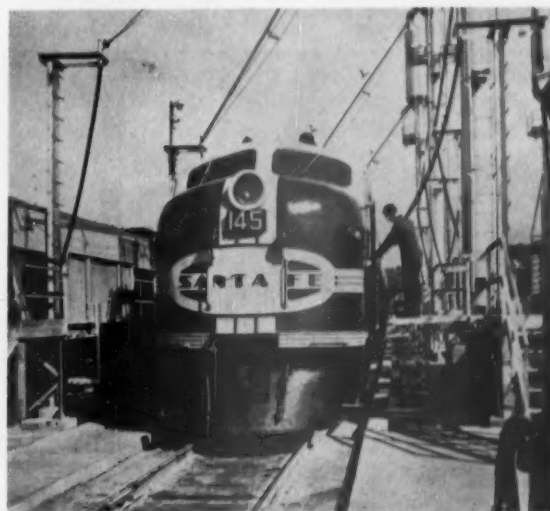
Following the sanding operation, locomotives are moved to the fueling and watering platform. Upon entering this portion of the facility an electrical track cir-

\*The major element of this terminal, a large diesel repair shop, was described in Part I of this series, which appeared in the November 29 issue.

### Three units in 30 min. . . .



1 SANDING is performed at first stop from elevated steel platforms with retractable sections which permit attendants to stand close to engines.



2 TRUCKS are sprayed with a cleaning solution as locomotive leaves sanding platform. An electrical track circuit controls solution sprays automatically.

More on next page ► ► ► ► ► ► ► ►

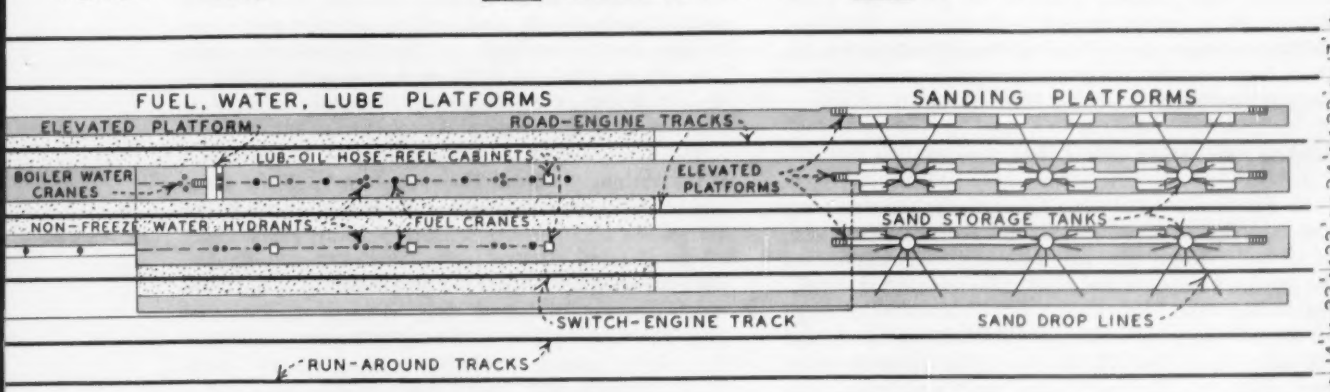
READY YARD



CONCRETE PLATFORMS



CONCRETE TRACK PAVING

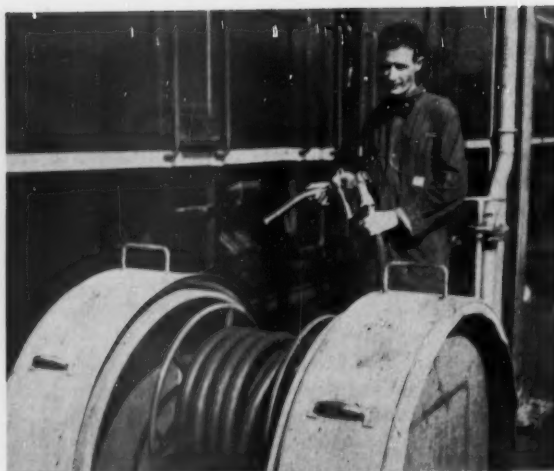


Effective arrangement of facilities enables three-unit locomotive combination to pass through entire service line in

about 30 min with only two stops. Movement of engines is from east (right of drawing) to west (left of drawing).



**3** FUELING and watering are performed at the next stop where sufficient fuel and water outlets are available to give one-stop service.



**4** LUBRICATING OIL is supplied from steam-heated cabinets at intervals along fueling and watering platform. Hose reels have an air-driven rewind mechanism.



**6** WASHING of engine body is done by mechanical scrubbing brushes following application of cleaning solution. Men on elevated platform scrub top of units.



**7** LOCOMOTIVE emerges from rinsing sprays and brushes completely serviced and ready for duty or to be moved to diesel shop for mechanical attention.

cuit is closed to start automatic truck washing sprays which apply a cleaning solution to the entire truck assembly. High pressure water at 250 psi is also available at this point for manual truck cleaning using special high-pressure nozzles that one man is able to handle. These high-pressure hoses are also used to wash down the platform area.

#### **Fueling, Watering and Other Services**

At the fueling and watering platform three-unit engines are again spotted only once for complete servicing to all units. There are eight fuel-oil cranes supplied by the Snyder Company, and six similar cranes for supplying boiler water. Lubricating oil is furnished through air-driven hose reels which are enclosed in steam-heated cabinets, three of which are located at intervals along each platform. Radiator water and fresh water are supplied to the platform through Murdock anti-freeze hydrants.

Another service performed at the fueling and water-

ing platform is the sterilizing of engine drinking water containers. This is done with a high pressure steam cleaner mounted on an elevated platform. This platform is also equipped with a retractable section which allows the attendant to step back and forth between the engine cab and the platform. Engines at this spotting also receive a thorough cleaning inside, engine adjustments, minor repairs, test of air brake equipment, etc.

The final stage of servicing operations is carried out at the washing platform. The engines move slowly across this platform without stopping. First in the washing sequence is a high-pressure truck-rinse spray which washes off the cleaning solution applied earlier, thus completing the truck washing. Mechanical body washing is then commenced by application of plain water to the entire engine with body sprays. Following in sequence are cleaning solution sprays, scrubbing brushes, rinsing sprays, rinsing brushes and, finally, two rinsing sprays. All of this equipment was supplied by the Whiting Corporation.

Between the scrubbing brush and the first rinse spray, manual scrubbing of the locomotive roof is performed





**5** **CLEANING** of cab interior, as well as sterilizing of drinking water containers and miscellaneous servicing tasks is handled at this elevated steel platform.

from elevated platforms also equipped with retractable platforms like those previously mentioned.

All of the ground-level platforms at the servicing facility are of reinforced concrete construction. In the vicinity of the mechanized body scrubbing brushes, the concrete slab is covered with 1½ in. of Johns-Manville acid-resisting asphalt mastic industrial flooring. Between the west end of the sanding platform and the end of the washing platform the two road-engine tracks are sup-

ported on a concrete slab. The slab is sloped to the center of the track and is equipped at intervals with drop inlets leading to a storm sewer system. The track for switch engines is similarly constructed adjacent to the fueling platform.

Most of the service lines from the service building and central power plant are carried overhead along the platforms on a row of steel columns. Supply lines are elevated over the switch engine track at the west end of the facility on a steel truss system. At points where service lines are below ground, they are contained in galvanized steel pipe conduits nested in Gilsulate loose-type insulation.

Mechanical washing operations are all controlled from a small brick building situated about the middle of the washer platform. A small metal building at the west end of the sanding facilities is used for records and for checking crews in and out.

A service building near the west end of the servicing tracks houses pumping equipment, cleaning solution mixing tanks, a lubricating oil booster heater and various other equipment necessary to operation of the servicing facility. Sand storage and drying facilities, also near the west end of the service tracks, are part of an old sand plant which has been converted to serve the new installation.

The servicing facilities were built by the Winston Brothers Construction Company, Minneapolis, Minn. A. W. Johnson, steam heat and water service engineer of the Santa Fe, Eastern Lines, had direct supervision over the design and construction of these facilities.

## A Way to Increase Net Income . . .

### BETTER CAR MOVEMENT INFORMATION

**T**imely, digested train and car movement information is doing much—and will do even more in the future—to help the railroads establish better control over their operations, and thus increase their net income. This was the theme of the Fall meeting of the Railway Systems and Procedures Association, held at Chicago's Morrison Hotel, November 16-18, and attended by more than 200 railroad members and guests.

In establishing the background for this theme, the program reviewed accomplishments of printing telegraph and punched card equipment, as, for example, in reducing per diem. A panel of top railroad officers was called upon to indicate the character of further control information which might help the carriers to increase net income. In this connection it was determined that outstanding needs are better traffic statistics, automatic transmission of waybill data from road to road, and information making possible better distribution of empty cars.

J. L. Barngrove, Jr., general traffic manager of the Lackawanna (who when with the New Haven installed the first integrated Teletype tape-to-card system of car reporting), stated that this system of information han-

dling had been of inestimable value to the New Haven. Information, he said, is the life-blood of railroading, and better—not necessarily more—information is needed to enable the carriers better to control the operations of all departments.

Mr. Barngrove served as chairman of a panel group to discuss controls established through information made available by Teletype, tape-to-card, etc.

W. K. King, assistant general superintendent transportation of the New Haven, described some of the benefits derived from their system of car reporting. The Teletype punched card system, he said, had enabled the railroad to reduce freight car turnaround time by at least a half day. He estimated that the advance consist, supplied by printing telegraph and punched cards, had enabled the New Haven to reduce by one hour the average time required for a car going through each of his road's yards. Punched cards have made it easy and economical for the road's transportation department to check quickly the performance of yards in getting cars on proper trains.

N. B. Marvin, assistant freight traffic manager of the Union Pacific, stated that since the end of World War



**YARD RADIO** enables yardmasters to keep on top of situations and "to prevent trouble rather than put out fires"—J. W. Harman, general superintendent, CPR, told the RSPA.

II shippers and receivers increasingly have been demanding information as to the location of freight in transit. Also, his railroad had noted a steady increase in the number of cars, and commodities, subject to diversion and reconsignment. The UP's system of printing telegraph and punched cards, he said, has made it considerably easier to make the diversions promptly and to inform shippers as to the progress of their shipments.

F. N. Nye, director of transportation research of the New York Central, told how punched card equipment enabled the NYC to make a transportation flow study which revealed weaknesses and duplications in its freight service. In applying the findings of this study, Mr. Nye said, the NYC had been able to provide better service while decreasing the number of train-miles run. At present, the NYC is beginning a program of installing printing telegraph and punched card facilities at 69 yards. This equipment will make possible continuing and up-to-the-minute flow studies.

V. G. Smart, assistant general superintendent transportation of the Canadian Pacific, told how that road has been able to reduce detention to freight cars at agency stations by more than a day and a half in the last year or so. By the use of punched cards, he said, it is easy to match up dates of arrival and departure of cars at stations. A report prepared from the cards showed detention days per car. Comparing the first eight months of 1953 with the same period this year, CPR loaded car-miles had decreased 14.9%, while empty miles had dropped 17.3%. Similarly, the number of days foreign cars were on the CPR dropped from 7.98 days per car to 6.39, and per diem was down 17%. In large part, Mr. Smart said, these favorable results were attributed by the CPR management to the policing of car detention at agencies.

W. K. Gentleman, supervisor railway Teletype service, CPR, told how Teletyping of waybills between Montreal and Toronto had enabled the CPR to make overnight delivery of 1st freight in the two cities a reality. Prior to this fast billing, he said, the road frequently found itself with freight on hand at stations but no bills. Mr. Gentleman stated that extension of waybill transmission by wire to other cities probably would be effected soon.

C. C. Cather, research supervisor, Southern Pacific, stated that as a result of the earlier receipt of train and car movement information, the SP's accounting department is able to get out earlier, more accurate, and thus more valuable reports to management. Among these reports is one made weekly on the third working day of each week, comparing expenses with the transportation budget.

One feature of the RSPA program was a round-up of the ideas of some top railroad officers concerning future informational needs for better operational control. D. W. Brosnan, vice-president—operation, Southern, asserted that one of the prime needs of operating forces is information and data processing equipment which would make possible a good job of distributing empty freight equipment. Mr. Brosnan said that all railroads are losing a lot of money—and some potential traffic—simply because the right car is not at the right place when it's needed. As shippers demand more specialized equipment adapted for handling their commodities, he said, this situation will become more acute.

In order to do an intelligent job of distributing equipment, Mr. Brosnan continued, there should be available at some central location information on cars available for loading, their capacity, grade, home road, door width, etc. Mr. Brosnan mentioned that in a year or so the Southern expects to have a Univac for doing some of its accounting work. During the computer's idle time, he concluded, the railroad would experiment with Univac as an aid in car distribution.

W. W. Patchell, vice-president of the Pennsylvania, asserted that "from an industry standpoint, we should be looking to see what could be done to make each road's job a little easier by the exchange of data from one road to another by mechanized methods—traffic data on shipments en route and data on empty cars en route are two examples of things that could be actively worked upon right now." Mr. Patchell also asked for more and better market research data, and measurement of the railroads' traffic against potential, as well as better competitive traffic data, and daily cost data which would show the results of operation of a given train, yard, or repair track.

W. N. Norris, general auditor of the Great Northern, and president of RSPA, called for more automatic exchange of machine-prepared data. Specifically, he asked for a standard "machine language waybill" and "a tape by-product when filling out the waybill" originally. "Think of the speed with which we could obtain accurate results if we would completely rid ourselves of repetitive manual copying with attendant delays and errors" in transmitting waybill data from road to road and between departments. Along the same lines, Mr. Norris also called for a standard machine interchange card and a set of standard reporting marks for freight cars. All these things, Mr. Norris said, would help the railroads speed up both the physical and paper movement of cars, and would help reduce clerical expense which now is taking more than eight cents of each revenue dollar.

Following the panel of railroad officers was a group of top engineers of communications equipment—and digital computer—manufacturers. These men told what equipment presently, or soon to be, available might do

to help railroads ease the burden of assembling and processing information needed for operational control. R. F. Dirkes, director—facsimile and private wire services, Western Union Telegraph Company, said that soon his company will make available facsimile equipment which can record information transmitted to the facsimile machine by closed circuit television. Also, he said, facsimile now can be arranged so that there will be simultaneous receipt of information at a number of stations.

J. R. Rae, general methods engineer, Long Lines Department, American Telephone & Telegraph Co., mentioned that soon that company will make available a six-channel tape-to-tape reader-transmitter-punch. A recent test of this equipment, he stated, showed that closing reports on the New York stock market could be sent to Boston in little more than an hour, compared with the 5-6 hours presently required to do this job. Mr. Rae also mentioned that AT&T has available a "channel only" offering, by means of which wire transmitters can communicate directly with an electronic computer without the necessity of converting from punched paper tape to magnetic tape.

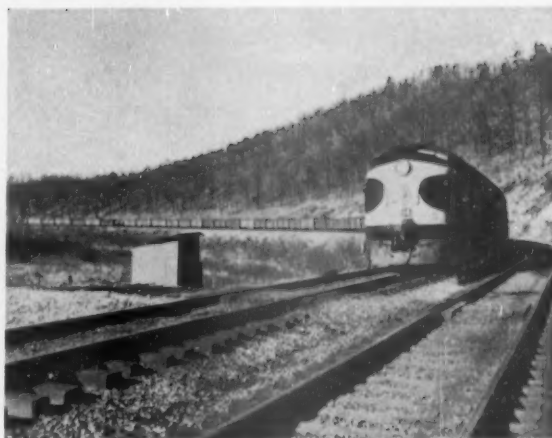
J. B. Williams, executive engineer—industrial products, Philco Corporation, mentioned the use of microwave by pipe line companies for such functions as controlling flow of oil through valves and turning pumps on and off. This ability of microwave, he said, could prove useful to the railroads in automatizing their operations.

Following the panel of industrial communications men was another communications group, composed of railroads: i.e., C. O. Ellis, general superintendent communications, Rock Island; R. A. Hendrie, general superintendent communications, Missouri Pacific; W. G. Salmonson, assistant chief engineer—signals, PRR; and L. R. Thomas, electronics engineer, Santa Fe. Members of this panel stated that railroad communications officers stand ready to furnish the facilities to handle any communications demand. However, the panel members made clear that the cost must always be remembered, and that, of course, management must furnish the money.

Mr. Thomas commented that some of the papers that were presented at the meeting by communications equipment men "tend to leave the impression that the problem of tape-to-card and card-to-card service can only be met by leased facilities. This is not the case. . . . [Most] railroads now have equipment and circuits which are as modern as those available from any source. In some instances these facilities can be used with modification to provide the service needed.

"Where existing plant cannot handle the additional load, facilities can be obtained by purchasing basic Teletype equipment and adding carrier over existing pole lines, as well as by microwave installations. . . . The major difficulty we have encountered in taking advantage of microwave is not the technical problems, but the matter of connection to existing telephone exchanges. The common carrier communication companies will not connect the local PBX facilities, which the railroads lease from them, to telephone circuits which operate entirely over a microwave system or in which a microwave system has been inserted for a part of the distance between terminals.

"In order to provide an integrated overall efficient



**LACK of information prevents railroads doing a good job of empty car distribution, thereby helping to reduce savings—said D. W. Brosnan, vice-president—operation, Southern.**

and economical railroad operation, the railroad itself must have absolute and instantaneous control of its communication facilities not only to the extent of the installation, maintenance and operation, but in cases of emergency the railroad must be able to control its own destiny so it will not be dependent upon outside sources to say when it can restore service and move trains."

In his statement to the panel, Mr. Salmonson said, "look at each problem individually" to determine the most economical method of operation, i.e., whether to purchase or lease the additional communication facilities needed.

Closing out activities on the third day of the meeting was a group of electronic computer "experts," including: R. M. Kalb, electronics engineer, Engineering Research Associates Division, Remington Rand, Inc.; H. F. Mitchell, Jr., director—sales engineering and applications research, Electronic Computer Department, Remington Rand; and C. R. DeCarlo, assistant director—Applied Science Department, International Business Machines Corporation. Mr. DeCarlo announced that IBM had overcome the relatively slow (when compared with processing speed) input of data to a computer, to the extent that it would soon have available a machine which would handle input data at the rate of 75,000 characters per second. Mr. DeCarlo, like his associates on the panel, felt that a common language which would enable machines, including computers, to communicate with each other was a must, but he asserted that a five-channel punched tape code is not "it." Mr. Kalb considered it likely that railroads eventually would go to the seven-channel tape because of the necessity for checking input data to computers, and use of the seven-channel tape would make possible an internal check on the quality of the information being sent.

Mr. Mitchell said it was likely that digital computers could be of real use to the carriers in achieving better handling of cars. He said, however, that several different sizes of computers might be necessary. In answer to a question, Mr. Mitchell said that a computer could be built which could control long stretches of CTC, without human intervention, though it would be very expensive. As proof, he cited guided missiles.





**THE PAUSE THAT IMPRESSES.** A cut of trailer-flat cars on a bridge near Houston illustrates Southern Pacific's success story as . . .

## Trailer-Flat Cars Build Rail Traffic

The Southern Pacific is currently using two types of trailer-flat car service, popularly known as "piggyback," to increase its rail-billed traffic and revenues. Based on 18 months' experience, the road has found that trailer-flat cars offer some distinct advantages: They are a useful tool for improving service to customers and reducing handling costs; and by tailoring the type and pattern of service to meet local traffic needs and competitive conditions, they can be used effectively to draw additional traffic to the rails.

The SP is now handling an average of more than 100 trailers a day in its trailer-flat car service.

Trailer-flat cars made their first appearance on the SP system between Houston, Tex., and Lake Charles, La., in May 1953. It was a move to speed the handling of existing railroad lcl traffic. Later that same month a new competitive service was instituted on the Pacific Lines between the San Francisco-Oakland bay area and Los Angeles. This service, for large-lot lcl traffic, was expanded on July 20, 1953, to include traffic in carload quantities. Traffic aspects of the Texas and West Coast operations are quite different, although both are trailer-flat car services.

### **Texas-Louisiana Operation**

Trailer-flat cars have definitely sparked the SP's lcl service in the territory between Houston and New Iberia, La. They have speeded service, cut costs and increased revenues.

The SP was already handling a fairly brisk lcl busi-

ness in the East Texas-West Louisiana area, but efforts to increase this traffic were hampered by physical conditions. There were these drawbacks:

(1) The San Jacinto Street freight house in Houston, though well situated in relation to local industries and warehouses, is five miles from Englewood yard where all through trains are made up. Merchandise cars for the eastbound manifest train leaving Englewood at 10:15 p.m. had to be closed at the San Jacinto house at 6 p.m.

(2) Interstate traffic for Port Arthur was handled in substitute highway service from Beaumont, necessitating a transfer from car to truck at Beaumont.

(3) Traffic for stations on the Lake Charles-Lafayette main line and Lake Arthur-Abbeville-New Iberia branches was handled in substituted highway service from Lake Charles, involving a car-to-truck transfer operation.

Shipments were not reaching the Port Arthur freight house (for transfer to pick-up and delivery trucks) until late the first morning, and they were not reaching points east of Lake Charles until first afternoon.

Since the substitute highway service—and all pick-up and delivery—was being performed with railroad-owned trucking equipment, the transition to trailer-flat cars was relatively simple.

The new service was inaugurated with a pool of 20 30-ft and 32-ft highway semitrailers equipped with tie-down fasteners, and 16 converted 40-ft flat cars. More equipment was added as needed, and now in the service are 193 22-ft, 24-ft, 30-ft and 32-ft semitrailers, and 58 40-ft and 17 52-ft flat cars. The trailers are identical



**PERMANENT RAMPS** (left) are used for end-loading trailers on cars. Two types of vans are used—the rounded-end van converted for “piggyback,” and a new, larger, square-end especially designed aluminum van.



**INTERIOR** (right) of one of the new “piggyback” vans shows how load is tied down to prevent shifting. Siding and roof of the van are aluminum, the sides are lined with plywood and the floor is hardwood.

to those normally used in the railroad's trucking operations, and when not being used in trailer-flat car service are used in regular highway services.

Thirty-five trailers are on daily operation schedules. Houston loadings include one to Skidmore (Corpus Christi), two to San Antonio, three to Ennis (Dallas), three to Lake Charles, two to Lafayette, and one to Avondale (New Orleans).

At Avondale two trailers are loaded for Houston and two for Lafayette. At Beaumont one is loaded for Lake Charles. Lafayette loadings include two for New Orleans and two for Houston. One trailer for Houston and one for Avondale are loaded at Lake Charles.

Schedules from Ennis specify one loading for each of the following cities: Houston, Lake Charles, Skidmore, San Antonio and Fort Worth.

Three trailers are loaded at Skidmore for Houston, one at Fort Worth for Ennis, and one at San Antonio for Dallas, Houston, and Skidmore.

Eastbound the trailers are loaded in *delivery order* at the San Jacinto Street freight house in Houston. When there is a sufficiently large shipment from a single shipper to one or two consignees, a trailer equipped for flat-car movement is sent out and loaded on the spot. Otherwise, freight is brought to the freight house by local trucks. Loading closes at 8:45 p.m., and the trailers are moved over city streets to Englewood yard, where they are backed onto the flat-cars and tied down. They are ready to move not later than 9:30 p.m. A short switch movement puts the loaded flat cars at the head of the 10:15 p.m. merchandise train.

The proper flat cars are switched out of the train at Beaumont and Lake Charles, and moved to stub-end unloading tracks nearby.

Westbound handling is essentially similar.

The transport cars used in this service on the Texas and Louisiana lines of the SP were converted at the Houston shops from ordinary 40-ft, 50-ton flat cars. The old flooring was replaced with new 3-in. creosoted planking.

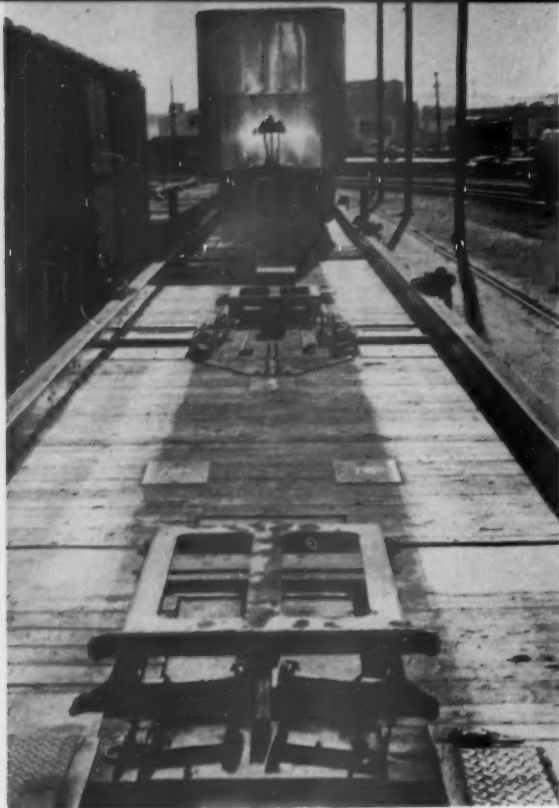
The area where the trailer dolly wheels would normally rest was steel covered. Welded side guide rails, hinged end floor plates to form runways between the cars, and tie-down equipment was added. Existing freight trucks were retained, but with steel wheels and antigrab bearings added. The draft gear was replaced with rubber-snubbed gear.

The SP management believes its trailer-flat car service is responsible for a gradual but steady growth in lcl traffic in this area at a time when such traffic in neighboring areas is showing a slow decline.

### **The California Story**

In California the present SP approach to trailer-flat car service is quite different from that in Texas and Louisiana. Here the primary concern is with trailer-load movements. This service is being used, and very effectively, to increase rail traffic in the particularly “hot” competitive transportation market between the San Francisco-Oakland area and the Los Angeles area.

Effective October 31, the SP expanded its service by establishing trailer-flat car operation between the San Francisco-Oakland area and points in Nevada; and points in Idaho, Utah, Wyoming and eastern Oregon in connection with the Union Pacific (*Railway Age*, November 1, page 15). The road is also considering service between the San Francisco and Los Angeles areas on the one hand, and points in Oregon and Washington, on the other. Proposed service to and from Washington



**THE FLAT-CAR FLOOR** is fitted with tie-down equipment. Guide rails assure proper positioning of van on the car.

would be in conjunction with connecting rail lines north of Portland.

Present trailer-flat car service between San Francisco-Oakland-Los Angeles moves via the SP's fast merchandise trains, the "Overnights." These "Overnights" operate at passenger-train speed and handle lcl traffic in conjunction with pick-up-and-delivery at the terminals. Trailer-loaded flat cars are now a regular part of the consist of these trains. Trailers are railroad owned, loaded with large-lot lcl shipments and more particularly carload or truckload traffic which entails PU&D.

#### **How It Works**

The trailers are transported by rail in both directions between River Team Track at the Los Angeles freight station and three points in the San Francisco-Oakland area: The Fourth and Berry Streets station in downtown San Francisco; San Jose; and the First and Webster Streets station in downtown Oakland. Rail distance Los Angeles to San Francisco is 470 miles, and the "Overnight" trains operate on a schedule of 12½ hours.

Trailers are loaded at consignor's door and unloaded at consignee's door. The power units do not make the rail trip. In Los Angeles, all trailers are operated to and from the River Team Track at the Los Angeles freight station. This is the point where through "Overnight" trains are made up and broken. The loading-unloading ramp is immediately adjacent to the station.

At San Jose the northbound train is cut, the San Francisco and Oakland cars separated, and the San Jose cars set out. The San Jose ramp is located at the freight station. Oakland cars, meanwhile, are handled by a stub merchandise train which operates in both directions between Oakland and San Jose to connect with the "Overnights."



**WHEELS** of the van are locked in place on the flat car with metal stops.

Through trains are made up and broken at the freight station in San Francisco. Here again the loading-unloading ramp is adjacent to the station. In Oakland, however, the ramp is in the downtown section. Cars are switched the short distance to and from the freight station where the merchandise stub train is made up and broken.



**22- OR 24-FOOT VANS** are loaded two to a flat car. Here the second is backed into place ahead of the first van already loaded and secured.





**FINAL SECURING** of van to car calls for tightening cables running from van underframe to floor of car.

This same trailer-flat car service is also used to handle large-lot lcl.

However, lcl rates were not changed in any way, although there is a sliding scale for individual shipments weighing 4,000 lb, 10,000 lb, and 20,000 lb. Sufficient large-lot lcl is handled via trailer-flat cars to keep a number of trailers busy every night, and the

service has enjoyed a steady growth since it was established.

As in the case on Texas and Louisiana lines, the trailers used are drawn from the regular railroad-owned pool of highway equipment. Equipped with tie-down fasteners for rail movement on the Pacific Lines are 287 22-ft, 24-ft, and 35-ft semitrailers. One hundred 53-ft 6-in. flat cars have been equipped for this operation. Each can carry two of the 22-ft or 24-ft trailers or one 35-ft unit.

Tire guides and tie-down equipment for the cars was fabricated and applied at SP's Bayshore Shops near San Francisco.

In addition to the services already mentioned, a trailer-flat car service was established in August 1953 between Los Angeles and Phoenix, Ariz., for large-lot lcl freight. The eastbound traffic handled by this service has also grown steadily.

The Southern Pacific's experience with trailer-flat cars over the past year and a half has given officers of the road a background against which to evaluate their operation. They attribute to the service these principal advantages.

- (1) It permits a later closing time at many stations, and also allows ample time for proper loading and stowage of lcl.
- (2) It reduces switching costs in some instances, and reduces the cost of handling merchandise at stations.
- (3) It allows maximum utilization of highway equipment because trailers can be operated over-the-road or by rail.
- (4) It makes possible a high utilization of railroad equipment.
- (5) It permits better, faster service to shippers, and reduces loss and damage.



**LOADED, LOCKED AND SECURED**, the trailer-flat cars are ready for the 470-mile ride between San Francisco and

Los Angeles. The next morning they are rolled off the cars and driven to the door of the consignee.



SMALL LAMP units between tracks are indicators for engineman.

## Whistle or Radio Controls Gates

If a train stops on approach circuit, the gates open to allow vehicles to pass — When the engineer blows his whistle or presses a button in his cab, the gates are lowered again

New and original control features are included in several crossing gate projects completed recently by the Richmond, Fredericksburg & Potomac. This railroad has 115 miles of double-track main line from Richmond, Va., north to Washington, D. C. On some sections, tracks are signaled for trains in both directions. In all instances, the controls for crossing gates are arranged for train movements in both directions on all tracks.

RF&P policy provides that, if an approaching train stops or is delayed on a crossing-control section for more than approximately 2.5 minutes, the gates will be raised automatically to permit highway vehicles to pass over the crossing. This policy led to a requirement for a means to cause the gates to be lowered when the train is ready to proceed over the crossing. This, of course,

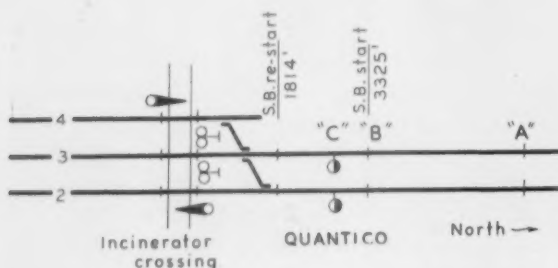
could have been done by installing additional track circuits for "restarts" as is sometimes done. However, the RF&P has continuous train control and cab signaling, as well as wayside signaling, controlled by coded circuits in which the track code feeds in the direction opposite to that of the next train movement. Adding another track cut in such a track circuit system involves additional expense. Irrespective of costs, the novel gate controls developed by the RF&P are, in many instances, more satisfactory because the engineman has control of the restart regardless of his position.

### Example of Whistle Control

Dumbarton Road crosses four main tracks about ¼ mile north of the freight yard at Richmond. When making switching moves in and out of the north end of the yard, a switch engine on Track 1 occupies the approach-control section for the crossing protection, thus setting the flashing-light signals in operation and lowering the gates. In nearly all instances, however, the switch engine so engaged does not actually reach the crossing.

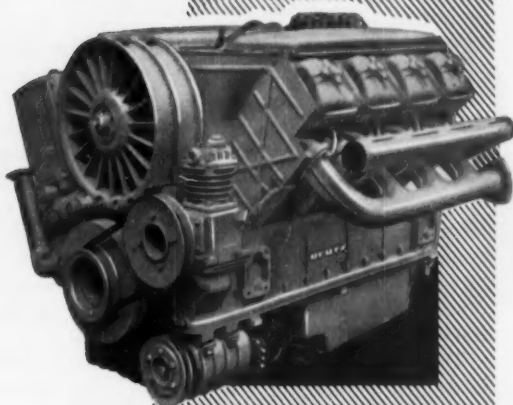
After the gates have been down two minutes during such switching moves, they are raised and the flashing-light signals are cut out automatically by timing controls. But if an approaching train enters any of the other approach control sections, the flashing lights operate and the gates are lowered, independent of the cut-out for the switch engine.

If the switch engine is to move over the crossing, the



RADIO CONTROLS of crossing gate are effective in entire area shown here.

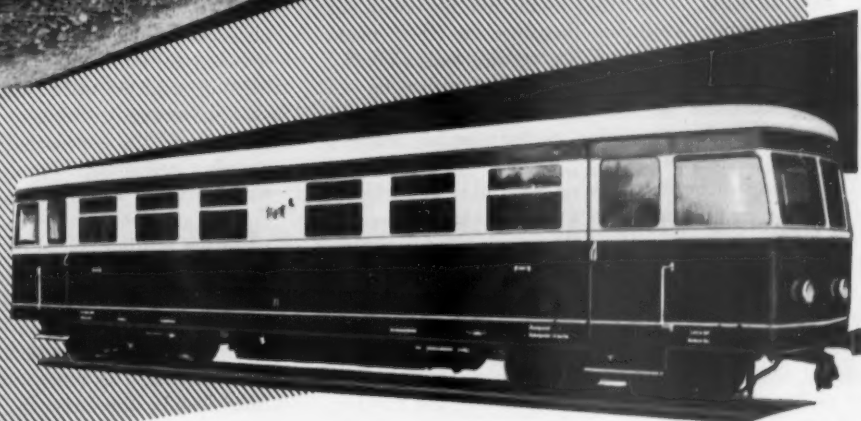
# DEUTZ



*Water- and Air-cooled*  
**DIESEL ENGINES**  
FOR RAILCARS  
AND LOCOMOTIVES

**DIESEL LOCOMOTIVES**

*Air-cooled*  
**DIESEL ENGINES**  
FOR AUXILIARY EQUIPMENT



**KLÖCKNER-HUMBOLDT-DEUTZ AG · KÖLN**





**TRACK INSTRUMENTS** attached to rail are part of the controls.

engineman blows his locomotive whistle as an audible warning. The sound of the whistle actuates a conventional telephone transmitter mounted on the gate control housing at the crossing. This transmitter feeds through an amplifier to energize a relay connected across the terminals like a loudspeaker. This relay controls circuits so that the flashing-light signals are operated and the gates are lowered just as by track-occupancy controls. In other words, the cut-out set up by the timing control is annulled. The whistle amplifier is adjusted to operate on a definite value. Horns from passing automobiles will not affect it.

#### **Example of Radio Control**

A flashing-light and gate project at Quantico, Va., originally was planned to include a similar special whistle sound control. Initial tests showed, however, that other local sounds, coming from airplanes landing and taking off, were of such volume they could not be tuned out with the equipment available. Therefore the RF&P made use of the existing radio on the locomotives to control the crossing protection. (Radio is in service on all RF&P locomotives for communication with the train crew and with the dispatcher via unattended wayside radio fixed stations.)

The track plan for the crossing protection at Incinerator crossing in Quantico appears herewith. Located between the tracks, just north of the crossing, are two electric lamp housings which are used here as crossing indicators. Each of these indicators is equipped with two lunar lenses facing in each direction. These lamps are normally dark.

When an approaching train or switch engine enters one of the approach control track sections, the flashing-light signals are operated and the gates go down in the usual manner. If the switch engine or train stops, or travels so slowly that it does not reach the crossing in

2.5 minutes, the automatic timing takes control to display two lunar lights in a horizontal row, northward as well as southward on both the crossing indicators. After 20 seconds more, the gates are raised and the flashing-light signals are cut out. To the engineman of the switch engine or train, the lunar lamps are a warning that the crossing protection will be or is cut out and, therefore, if he is moving toward the crossing, he must stop short of the crossing or take action to hold the gates in the down position. As additional warning, when the two horizontal lunar lights are displayed, the cab signal in the locomotive cab will be made to display a restricting indication.

When the engine or train is ready to move toward and over the crossing, the engineer pushes a special button in the locomotive cab. This button puts the radio "on the air." The resulting signal is picked up by a short-range radio receiving set in the sheetmetal instrument house at Incinerator crossing. After being fed through an amplifier, this energy operates a relay which controls circuits so that the flashing-light signals are set in operation and the gates are lowered in the same manner as for a whistle signal. These automatic timing devices function for movements in either direction on the main tracks (2 and 3) or the passing track (4).

The radio also functions as a directional control. If it is desired to make a reverse move over the crossing after clearing, and the gates have raised by operation of the directional controls in normal manner, pushing the radio button releases the directional control and in addition causes the crossing protection to operate.

#### **Selective Speed Controls**

The installation at Quantico includes selective speed control.

For example, when a southbound train passes Point A (see diagram), a timing-measuring relay is started in operation and energy is removed from a slow-release relay timed to provide 25-second crossing warning at 80 mph. If Point B is reached before the time relay has completed its cycle of operation, the average speed of the train is above 50 mph, and the crossing protection will be controlled by the high speed circuit (80 mph).

However, if the time relay cycle of operation is completed before the train reaches "B," because train speed is below 50 mph, the start of the crossing protection is held off until the train passes Point "C" which will provide 25-second warning at 50 mph.

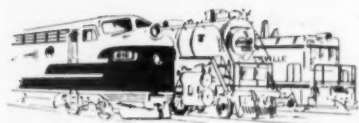
To avoid the expense of too many track circuits for crossing protection controls, devices known as track instruments are used to determine train speeds. Such a device, attached to the rail, opens and closes circuits when the leading trucks of a locomotive pass, as for example at "B" in the diagram.

These crossing protection projects were planned and constructed by RF&P forces, under the direct supervision of V. P. Shepardson, engineer signals and communications. The gates and flashing-light signals were furnished by the Griswold Signal Company; the relays, track instruments and crossing indicators by Union Switch & Signal Division of Westinghouse Air Brake Company; and radio equipment by Motorola.

# Running a railroad



depends on communications.



... Forty-three railroads

depend on



**P-A-X**

**BUSINESS**

**TELEPHONE**

**SYSTEMS**

Everyone has his problems . . . but often, before a railroadman can solve a problem, he has to find it moving on a split-second schedule somewhere along a network of tracks! "Where?" and "when?" are questions he lives with, hourly and intimately. His answers must be fast—direct—dependable.

On forty-three roads, today, railroad men depend on P-A-X Business Telephone Systems to bring them answers. P-A-X switchboards at key points provide them with the finest in telephone communication.

With P-A-X Telephone Systems, control of operations is close and direct. Maintenance is co-ordinated and improved. Service for shippers and passengers is faster, smoother. Emergencies are reported promptly, dealt with quickly and adequately. Time is saved, methods are more efficient, costs are cut.

P-A-X is a system of "private" telephones, separate from the public telephone system and meeting the most exacting needs of the railroad industry. It operates over wire, carrier or radio, is completely automatic and establishes all "inside" calls within seconds, day or night. P-A-X is manufactured by Automatic Electric, originator of the automatic (dial) telephone system. There is no finer quality!

For facts or service, contact your Automatic Electric representative, or call HAYmarket 1-4300, Chicago, Ill.

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In Canada: Automatic Electric Sales (Canada) Limited, 185 Bartley Drive, Toronto 16, Ontario  
Export Distributors: International Automatic Electric Corporation, Chicago

## Organizations

(Continued from page 11)

chairman, C. H. Sprague & Son Co., and chairman of TAA's New England forum, will speak on "Transportation in 1975: A Look Into the Future." W. H. Day, manager, transportation department, Greater Boston Chamber of Commerce, and general chairman, New England Shippers Advisory Board, will moderate an afternoon session on "New England Transportation Problems." H. E. Bixler, assistant to president, Boston & Maine, will represent railroads in this discussion.

## Supply Trade

Edgewater Steel Company has opened a New York district sales office at 60 East 42nd street, with Daniel J. Mooney, Jr., formerly with Great Lakes Carbon Corporation, as district sales manager. Scott Donahue, whose sales agency has represented Edgewater in the New York area for many years, will continue to be interested in the company's sales activities in an advisory capacity.

The Griffin Wheel Company has moved its executive and sales offices to 445 North Sacramento boulevard, Chicago.

Nelson C. Dezendorf, vice-president of General Motors Corporation and general manager of its Electro-Motive Division, has been elected a director of the Rail-Trailer Company, Chicago.

Stockholders of ACF Industries, Inc., at a special meeting November 23, approved a plan to amend the firm's capital structure. Details of the



D. J. WILLIAMS, who has been manager of railroad sales in the western region for Air Reduction Sales Company, has been appointed manager of the railroad department, his headquarters remaining in Chicago.

plan were reported in *Railway Age*, October 18, page 16.

C. H. Drury has been appointed vice-president and general manager of Canadian General Transit Company, succeeding E. W. Wilson, retired. Mr. Drury was formerly vice-president, purchasing, of the parent Canadian Car & Foundry Co.

## Securities

### CNR Offers \$250 Million Of New Eight-Year Bonds

A new issue of \$250,000,000 of 2 3/4% Canadian National bonds, to mature in eight years and one and one-half months, has been announced by Donald Gordon, CNR chairman and president. The bonds are being offered to the public through investment dealers and banks at 99, to yield 2.89% to maturity.

Dated December 15, the bonds, guaranteed unconditionally by the Canadian government, will mature February 1, 1963, subject to redemption on or before February 1, 1961. Proceeds will be used to repay temporary interest-bearing capital advances to the CNR by the government, and for capital expenditures.

### Security Price Averages

	Nov. 30	Prev. Week	Last Year
Average price of 20 representative railway stocks	78.52	77.81	60.59
Average price of 20 representative railway bonds	97.25	97.11	90.79

### Dividends Declared

ALABAMA GREAT SOUTHERN.—ordinary, \$4, semiannual; 6% partic. preferred, \$4, semiannual; both payable December 24 to holders of record December 3.

BOSTON & ALBANY.—\$2.25, payable December 31 to holders of record November 30.

CAMDEN & BURLINGTON COUNTY.—75¢, semiannual, payable January 3 to holders of record December 15.

CHICAGO, BURLINGTON & QUINCY.—year-end, \$2, payable December 29 to holders of record December 14.

CHICAGO SOUTH SHORE & SOUTH BEND.—resumed, 15¢, payable December 15 to holders of record December 3.

COLORADO & SOUTHERN.—common, \$1; 4% non-cumulative 2nd preferred, \$4; both payable December 30 to holders of record December 9.

DELAWARE.—\$1, semiannual, payable January 3 to holders of record December 15.

DELAWARE & BOUND BROOK.—50¢, quarterly, paid November 20 to holders of record November 13.

DENVER & RIO GRANDE WESTERN.—\$1.25, payable December 20 to holders of record December 10.

ELMIRA & WILLIAMSPORT.—7% preferred, \$1.65, semiannual, payable January 3 to holders of record December 20.

ERIE.—37 1/2¢, quarterly, payable December 15 to holders of record December 3.

KANSAS, OKLAHOMA & GULF.—6% preferred, \$3, semiannual; 6% non-cumulative preferred B, \$3, semiannual; 6% non-cumulative preferred C, \$3, semiannual; all paid December 1 to holders of record November 19.

LYKENS VALLEY R.R. & COAL CO.—40¢, semiannual, payable January 3 to holders of record December 15.

MASSAWIPPI VALLEY.—\$3, semiannual, payable February 1 to holders of record December 31.

MINNEAPOLIS & ST. LOUIS.—35¢, payable December 20 to holders of record December 10.

MOBILE & BIRMINGHAM.—4% preferred, \$2, semiannual, payable January 1 to holders of record December 1.

NASHVILLE & DECATUR.—guaranteed, 93 3/4¢, quarterly, payable January 3 to holders of record December 21.

NEW YORK & HARLEM.—common, \$2.50, semiannual; 10% preferred, \$2.50, semiannual, both payable January 3 to holders of record December 10.

NORTHERN CENTRAL.—\$2, semiannual, payable January 17 to holders of record December 31.

PHILADELPHIA & TRENTON.—\$2.50, quarterly, payable January 10 to holders of record December 31.

PITTSBURGH, FORT WAYNE & CHICAGO.—common, \$1.75, quarterly; 7% preferred, \$1.75, quarterly, both payable January 3 to holders of record December 10.

PITTSFIELD & NORTH ADAMS.—\$2.50, semiannual, payable January 3 to holders of record December 17.

READING.—4% non-cumulative 1st preferred, 50¢, quarterly; 4% 2nd preferred, 50¢, quarterly; both payable January 13 to holders of record December 23.

ROCHESTER & GENESEE VALLEY.—\$2, semiannual, payable January 3 to holders of record December 20.

SOUTHERN PACIFIC.—75¢, quarterly, payable December 20 to holders of record November 29.

STONY BROOK.—\$2, semiannual, payable January 5 to holders of record December 30.

UNION PACIFIC.—\$1.25, quarterly; extra, \$2; both payable January 3 to holders of record December 6.

UNITED NEW JERSEY RR & CANAL.—\$2.50, quarterly, payable January 11 to holders of record December 18.

WABASH.—\$3, payable December 24 to holders of record December 10.

WARE RIVER.—guaranteed, \$3.50, semiannual, payable January 5 to holders of record December 17.

WEST JERSEY & SEASHORE.—\$1.50, semiannual, payable January 3 to holders of record December 15.

WESTERN NEW YORK & PENNSYLVANIA.—common, \$1.50, semiannual; 3% preferred, \$1.25, semiannual, both payable January 3 to holders of record December 31.

WHEELING & LAKE ERIE.—common, \$1.43 3/4, quarterly; 4% prior lien, \$1, quarterly, both payable February 1 to holders of record January 31.

## Railway Officers

ATLANTIC COAST LINE.—J. J. Peacock, general superintendent dining cars at Washington, D.C., has been appointed general superintendent transportation at Wilmington, N.C., effective December 10, succeeding C. S. Sanderson, who has been named general manager of the Clinchfield at Erwin, Tenn. R. F. Murphy, assistant to general manager, has been appointed assistant to general superintendent transportation at Wilmington. H. W. Pinner, transportation assistant, has been named assistant to general superintendent transportation, with headquarters as before at Wilmington, succeeding J. B. Mashburn, who has been appointed superintendent dining cars at Washington. D. M. Wallace, assistant to general superintendent dining cars, has become assistant superintendent dining cars at Washington.

CHICAGO & EASTERN ILLINOIS.—F. W. Powers, general



since  
1939...the

5

IMPORTANT IMPROVEMENTS  
IN TRACTION MOTOR BEARINGS  
WERE PIONEERED BY

**SKF**



Pinion End Bearing with M-2 Roller Riding Cage. Disassembly for inspection is easy—just slide out the inner ring; you can then move the rollers out of the outer ring groove, and rollers and M-2 Cage slide right out. Reassembly is just as easy.



SKF Commutator End Traction Motor Bearing. Crowned rollers provide maximum capacity. Armature is positively stabilized and held in proper position in the motor frame. Has M-2 Cage—same as pinion end bearing—for easy disassembly and inspection.

Here they are—the 5 most significant improvements in traction motor bearing design, all pioneered by SKF. . .

- 1939** - The use of crowned rollers provided significant increases in *capacity*.
- 1943** - Assisted Railroads in developing "sealed-grease lubrication."
- 1945** - SKF's "High Capacity" design provided still more capacity in the same space. Larger, longer rollers again increased capacity without requiring more space.
- 1948** - Improved cage design permitted easy disassembly and reassembly for inspection of all parts.
- 1952** - SKF's M-2 Cage Design, applied to *both* pinion end and commutator end bearings, further facilitates disassembly and reassembly. Sealed grease lubrication now permits running up to 500,000 miles without relubrication.

Today's SKF Traction Motor Bearings are the result of these milestones of design initiative—incorporating each of these technological advances to allow for a greater capacity and a reduction in maintenance costs.

Depend, as always, on SKF's leadership; depend, as usual, on SKF's uniform quality.

**SKF INDUSTRIES, INC.**, Philadelphia 32, Pa.—  
manufacturers of SKF and HESS-BRIGHT® bearings.

7730

**SKF**  
TRACTION MOTOR BEARINGS

## The BEST for YOUR PLATFORMS



**STANDARD**  
EXPRESS • BAGGAGE • MAIL  
TRUCKS

### ★ SMARTLY MODERN

### ★ STAMINA CONSTRUCTED

### ★ FREE ROLLING—QUIET

MORE—these finer platform conveyances have been service tested in scores of America's outstanding terminals and stations—a new and higher standard for YOUR CONSIDERATION.

### TRACTOR DRAWN EXPRESS TRUCKS



Superbly engineered for many-year duty. Pneumatic tired, roller bearing, safety brake, patented hitch, streamlined with color to match trains. 6000 lbs. capacity, weight 1050 lbs.

### BAGGAGE and MAIL CARTS\*

#### TRACTOR DRAWN

Same features as Express Trucks above including Timken bearing fifth wheel and only six points to grease. Capacity 5,000 lbs., weight 756 lbs.



#### HAND DRAWN

Mounted on 28" x 4" solid rubber tires. Longer tongue than tractor drawn units. All features of tractor drawn units except no rear towing hitch. Capacity 4,000 lbs., weight 750 lbs.



\* Conform to the recommendations of the Committee on Baggage, Express and Railroad Mail of the A. A. R.

Write for Bulletin 109-BR

**FRENCH & HECHT**  
DIVISION  
KELSEY-HAYES WHEEL COMPANY  
DAVENPORT, IOWA

agent at Shreveport, La., has been transferred to Nashville, Tenn.

**CLINCHFIELD.**—C. S. Sander-son, general superintendent transportation of the Atlantic Coast Line at Wilmington, N.C., has been appointed general manager of the Clinchfield at Erwin, Tenn., effective December 10. He succeeds W. H. Kendall, who has been appointed assistant to president of the Louisville & Nashville at Louisville, Ky.

**LOUISVILLE & NASHVILLE.**—W. H. Kendall, general manager of the Clinchfield at Erwin, Tenn., has been appointed to the newly created



W. H. Kendall

position of assistant to president of the L&N at Louisville, effective December 10.

W. Andrew Coe, assistant treasurer, has been elected treasurer at Louisville, succeeding the late M. Castner Browder, (*Railway Age*, October 25).

**MILWAUKEE.**—Gerald M. Ryan, assistant freight traffic manager—rates and divisions at Chicago, has been appointed freight traffic manager—rates



**CHICAGO & ILLINOIS MIDLAND.**—Carl E. Frankenfeld, assistant to vice-president—personnel at Springfield, Ill., has been named to the newly created position of manager of personnel

and divisions there, succeeding Earl J. Hyett, whose retirement was noted in *Railway Age*, November 22. Mr. Ryan's successor is Raymond E. Hibbard, general freight agent, who in turn is succeeded by James J. Landrigan. Maurice J. Leen replaces Mr. Landrigan as assistant general freight agent at Chicago.

**NEW HAVEN.**—Stephen P. McDonough, assistant to operating vice-president at Boston, has been appointed assistant vice-president. A native of South Boston, Mr. McDonough started railroading with the New Haven as clerk at Readville, Mass., and was subsequently engine dispatcher; assistant trainmaster, Boston division; trainmaster; assistant superintendent; superintendent; terminal manager Boston Terminal Company, and operating assistant. Last June Mr. McDonough was promoted to assistant general superintendent, and in August became assistant to vice-president.

**NEW YORK CENTRAL.**—E. L. Johnson, chief—engineering services, has retired under company pension regulations, after 37 years of service.

F. W. Pollock has been appointed auditor of revenues at New York.

**NORFOLK SOUTHERN.**—F. J. Tally, assistant to operating vice-president, has been appointed assistant to executive vice-president, with headquarters as before at Norfolk, Va.

**SOUTHERN PACIFIC TRANSPORT COMPANY.**—T. W. Smith has been appointed assistant director of personnel and safety at Houston, Tex.

**TOLEDO, PEORIA & WESTERN.**—Donald O. Schroen, general agent at Peoria, Ill., has been transferred to Tulsa, Okla., to succeed J. P. Anderson, who is retiring. Robert L. Russell, assistant chief clerk of traffic, replaces Mr. Schroen.

## OBITUARY

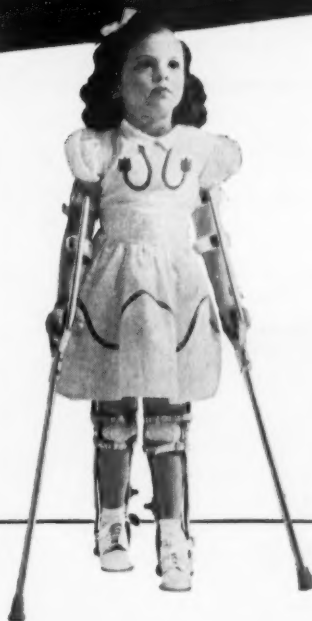
George C. Dew, 68, retired foreign freight traffic manager of the Canadian Pacific, died November 19 at Peterborough, Ont., following a lengthy illness.

E. M. Hastings, who retired in 1950 as chief engineer of the Richmond, Fredericksburg & Potomac, died November 21. Mr. Hastings was a past president of the American Railway Engineering Association.

Allen J. Leja, 59, assistant secretary and assistant treasurer of the Chesapeake & Ohio, died November 22.

Joseph A. Andreucetti, 73, retired chief electrical engineer of the Chicago & North Western, died November 29 at his home in Palatine, Ill.

# FIGHT POLIO!



NO POLIO VACCINE CAN HELP THIS CHILD. While science works to protect healthy kids against polio, those already stricken are fighting to live and play again.

They need expert treatment. They need costly equipment—iron lungs, rocking beds, braces. They need YOUR financial support to meet the crushing cost of rehabilitation. Help them fight back—give voluntarily!

Join the  
**MARCH  
OF DICES**  
*January 3-31*

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All Types  
"Service-Tested"

#### FREIGHT CAR

REPAIR PARTS

For All Types of Cars

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Diesel, Steam, Gasoline,  
Diesel-Electric

#### RAILWAY TANK CARS and STORAGE TANKS

6,000 - 8,000 and 10,000-gallon  
Cleaned and Tested

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Overhead and Locomotive

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### Educational Services for RAILROAD MEN

Our New Service  
on  
Diesel Locomotive  
Operation  
is highly recommended  
for  
Engineers and Firemen

*The Railway  
Educational Bureau  
Omaha 2, Nebraska*

### FOR SALE LOCOMOTIVES— DUMP CARS

5—65 ton H. K. Porter Diesel  
electric locomotives, 400 HP.  
General Electric and Cum-  
mins equipment. Completely  
reconditioned.

10—Koppel and Western 30 cu.  
yd. Air Dump Cars. Lift  
type doors with side aprons.  
All Steel. Bargain.

MISSISSIPPI VALLEY  
EQUIPMENT CO.  
509 Locust St. St. Louis 1, Mo.

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R. R. Water Tenders (new) 32  
Units Galv. Spout 8" Hydro-  
Valve with stand pipe, pulley,  
chains, weights, etc. Complete  
\$250. Lots of 5 or more \$200.  
1200 ft. 9" Steel Cement Lined  
Drainage Pipe—Close Out.  
1500 ft. 20" O.D. x 5/16" steel  
pipe No. 1—Save 40% New  
Cost.

MORITZ COMPANY  
Braddeock, Pa. Br. 1-3700

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Permanent position for an AAR  
billing clerk for a well estab-  
lished Chicago, Illinois, Private  
Car Line. Address replies stating  
experience, age, qualifications,  
etc., to

Box 745, RAILWAY AGE,  
30 Church St., New York 7, N.Y.

Tenders are invited for the supply of 20 Main  
Line Diesel Locomotives to the New Zealand  
Government Railways.

Copies of Specifications will be supplied on request  
to the New Zealand Government Trade Commis-  
sioner, 1346 Connecticut Avenue, N.W., Wash-  
ington, D.C.

Tenders will close at the office of the Comptroller  
of Stores, New Zealand Railways, Private Bag,  
Wellington, New Zealand, at 4.0 p.m. on Thurs-  
day, 30th December, 1954.

The lowest or any tender will not necessarily be  
accepted.



# Advertisers

## IN THIS ISSUE

The information contained in the advertising pages of Railway Age constitutes an important supplement to the editorial content of this paper. Refer to them for the latest advances in equipment, materials and supplies.

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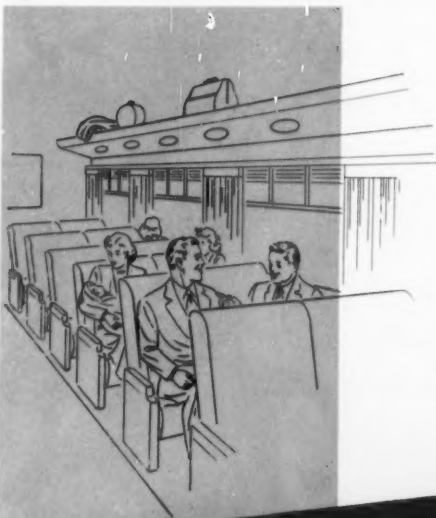
**STEEL** in stock at  
**RYERSON**

Joseph T. Ryerson & Son, Inc., Plants: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Charlotte, N.C., Jersey City, Pittsburgh, Los Angeles, San Francisco, Seattle, Spokane.

**BARS**—carbon & alloy, hot rolled & cold finished  
**STRUCTURALS**—channels, angles, beams, etc.

**PLATES**—sheared & U. M., inland & Way Floor Plate  
**SHEETS**—hot & cold rolled, many types and coatings

**TUBING**—boiler & mechanical, seamless & welded  
**STAINLESS**—Alloy plates, sheets, bars, tubes



**New! RUBBER TYPE**

***Symington***<sup>®</sup>

(Constant Contact)

## **RESILIENT SIDE BEARINGS**



- Improved Service Life.
- Increase wheel mileage between turnings by 100%.
- Prevent truck shimmy and car nosing.
- Improve riding quality and prolong equipment life.
- Control and cushion car body roll.
- Greater passenger comfort.

*Available for Passenger and Freight Service.*

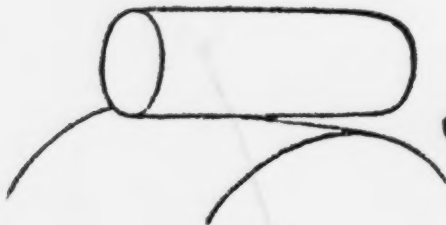
# **THE SYMINGTON-GOULD CORPORATION**

Works: DEPEW, NEW YORK

New York • Chicago • St. Louis • Boston • San Francisco • In Canada: ADANAC SUPPLIES, LTD., Montreal, Que.

# The taper makes TIMKEN® the only journal bearing that delivers what you expect when you buy a roller bearing

*This month Dr. Oscar Horger demonstrates full line contact*



EVEN SLIGHT  
SKEWING OF STRAIGHT  
ROLLERS UPSETS  
FULL LINE CONTACT

**T**HERE are only two primary reasons why railroads put journals on roller bearings: (1) to end the hot box problem and (2) to cut operation and maintenance costs to a minimum. The only bearing you can count on to do both is the Timken® tapered roller bearing. Here's why: 1) *Positive roller alignment.* The taper keeps roller ends snug against the rib, where wide area contact keeps rollers properly aligned. Therefore no skewing of rollers can take place in a Timken bearing to upset the full line contact, shorten the life of the bearing.

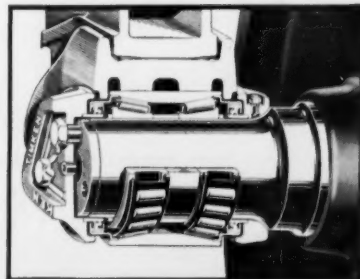
2) *No lateral movement within the bearing.* Lateral movement in straight roller bearings causes scuffing of rollers and races. And it pumps lubricant through the closure, draws dirt and water in. Taking the thrust loads

calls for auxiliary devices. These are difficult to lubricate with grease, and are expensive to maintain.

Timken bearings always *roll* the load, never *slide* it. The taper prevents lateral movement, lets them take the thrust. There's no scuffing or pumping action. This helps end the hot box problem. It means less maintenance, less lubricant, longer bearing life.

Timken is the only journal bearing you can fully count on to end the hot box problem and cut operation and maintenance costs to a minimum—it's the taper! Get what you pay for. Get Timken *tapered* roller bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO".

THE TAPER MAKES  
**TIMKEN**  
TRADE-MARK REG. U. S. PAT. OFF.  
THE BEARING YOU TRUST



NOT JUST A BALL — NOT JUST A ROLLER — THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION